

**EA02-025**

**FORD 10/27/03**

**APPENDIX N**

**BOOK 25 OF 61**

**PART 3 OF 5**

Polarity

**Move Hot-Alt-Time circuit to Stationary terminal**

10

**Effectiveness Rank**      3      ~~minerals~~

Prevents Corrosion      1  
Increase Path from B+ to Ground      3      Reduces probability of power short to ground  
Reduces Power in Switch      1

**Factors**

**Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

Ingress of corrosives causes ground path

**Continuous Power**

To ground circuit      X  
To Load circuit

**Switch Orientation**

Internal path to ground  
Susceptibility to fluid ingress  
Terminals form cell to ground

**Current Capability**

**Grounded Hexport**      X

**Plastic Params**

Hot Wire Ignition  
Oxalic Acid

**Manufacturing Study**

**Service Study**

**Part(s) Availability**

**Customer Impact**      10      Transparent to customer  
**Technical Rank**  
**Total Rank**      10

## Thermal

**Interrupt Power with Thermal link inside switch in power terminal**

4

<b>Effectiveness Rank</b>	8	ratable
<b>Prevents Corrosion</b>	1	
<b>Increase Path from B+ to Ground</b>	1	
<b>Reduces Power in Switch</b>	8	Disconnects power at elevated temperature

**Factors****Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

Ingress of corrosives causes ground path

**Continuous Power**

To ground circuit	X
To Load circuit	X

**Switch Orientation**

- Internal path to ground
- Susceptibility to fluid ingress
- Terminals form cell to ground

**Current Capability**

X

**Grounded Hexport****Plastic Params**

Hot wire Ignition	X	Trip temperature below ignition temp.
Oxalic Acid		

**Manufacturing Study**

Feasability incomplete

**Service Study****Part(s) Availability****Customer Impact**

Transparent to customer

**Technical Rank**

10

**Total Rank**

10

### Replace switch with Transducer and semi-conductor switch

5

<b>Effectiveness Rank</b>	64	notable
Prevents Corrosion	5	Kapton replaced with ceramic seal and mechanical switch replaced by semi-conductor.
Increase Path from B+ to Ground	8	Removes switch terminals from switch cavity
Reduces Power in Switch	1	No effect

#### Factors

##### Connector Seal

Ingress of corrosives causes ground path

##### Kapton Seal

Ingress of corrosives causes ground path

X

##### Continuous Power

To ground circuit	X
To Load circuit	X

##### Switch Orientation

- Internal path to ground
- Susceptibility to fluid ingress
- Terminals form cell to ground

##### Current Capability

##### Grounded Busport

##### Plastic Params

- Hot Wire Ignition
- Oxalic Acid

##### Manufacturing Study

Feasibility Incomplete

##### Service Study

##### Part(s) Availability

##### Customer Impact

Transparent to customer

##### Technical Rank

10

##### Total Rank

Topology

**Change Converter Button shape to reduce stress on Diaphragm**

7

Effectiveness Rank	5	increase
Prevents Corrosion	5	May increase life of diaphragm reducing brake fluid leak.
Increase Path from B+ to Ground	1	No Effect
Reduces Power In Switch	1	No Effect

**Factors**

**Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

Ingress of corrosives causes ground path

X

**Continuous Power**

To ground circuit  
To Load circuit

**Switch Orientation**

Internal path to ground  
Susceptibility to fluid ingress  
Tarnish from cell to ground

**Current Capability**

**Grounded Hexport**

**Plastic Parasites**

Hot Wire Ignition  
Oxalic Acid

**Manufacturing Study**

Feasability Incomplete

**Service Study**

**Part(s) Availability**

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

Sliding seal

**Replace Kapton with sliding Seal and Piston**

6

Effectiveness Rank	5	rationale
Prevents Corrosion	5	May provide a Better seal to Brake fluid
Increase Path from B+ to Ground	1	No Effect
Reduces Power in Switch	1	No Effect

Factors

**Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

X

Ingress of corrosives causes ground path

**Continuous Power**

To ground circuit  
To Load circuit

**Switch Orientation**

Internal path to ground  
Susceptibility to fluid ingress  
Terminate form cell to ground

**Current Capability**

**Grounded Hexport**

**Plastic Params**

Hot Wire Ignition  
Chloric Acid

**Manufacturing Study**

Feasability incomplete

**Service Study**

**Part(s) Availability**

**Customer Impact**

Transparent to customer

**Technical Rank**

10

**Total Rank**

## Teflon

**Replace Kapton with Teflon Diaphragm**

5

<b>Effectiveness Rank</b>	<b>5</b>	reduces
<b>Prevents Corrosion</b>	<b>5</b>	Increase the life of diaphragm to reduce failure.
<b>Increase Path from B+ to Ground</b>	<b>1</b>	No Effect
<b>Reduces Power in Switch</b>	<b>1</b>	No Effect

**Factors****Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

X

Ingress of corrosives causes ground path

**Continuous Power**To ground circuit  
To Load circuit**Switch Orientation**Internal path to ground  
Susceptibility to fluid ingress  
Terminates from seal to ground**Current Capability****Grounded Hostport****Plastic Params**Hot Wire Ignition  
Oxalic Acid**Manufacturing Study**

Feasibility Incomplete

**Service Study****Part(s) Availability****Customer Impact**

Transparent to customer

**Technical Rank**

10

**Total Rank**

10

**Put insulation Disk btwn Cup and spring arm**

4

<b>Effectiveness Rank</b>	8	rationale
<b>Prevents Corrosion</b>	1	No Effect
<b>Increase Path from B+ to Ground</b>	8	loose metal parts cannot short power to ground. Fluid can.
<b>Reduces Power In Switch</b>	1	No Effect

**Factors****Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

Ingress of corrosives causes ground path

**Continuous Power**

To ground circuit	X
To Load circuit	

**Switch Orientation**

Internal path to ground	X
Susceptibility to fluid ingress	
Terminates form cell to ground	

loose metal parts cannot short power to ground. Fluid can.

**Current Capability**

Current can still reach ground thru load circuit short to ground

**Grounded Hesport**

X Current can still reach ground thru fluid.

**Plastic Params**

Hot Wire Ignition	
Ozone Acid	

**Manufacturing Study**

feasability not completed

**Service Study****Part(s) Availability**

<b>Customer Impact</b>	10	Transparent to customer
<b>Technical Rank</b>		
<b>Total Rank</b>	10	

Diaphragm

**Close Switch cavity with Diaphragm b/wn Transfer Pin and Spring arm**

3

Effectiveness Rank	24	rationale
Prevents Corrosion	3	Breke Fluid cannot reach switch terminals. Cell cannot form.
Increase Path from B+ to Ground	6	Ground circuit is isolated from terminals. Path to ground is blocked.
Reduces Power In Switch	1	No effect

**Factors**

**Connector Seal**

Ingress of corrosives causes ground path

**Kaption Seal**

Ingress of corrosives causes ground path

X

**Continuous Power**

To ground circuit  
To Load circuit

X

**Switch Orientation**

Internal path to ground  
Susceptibility to fluid ingress  
Terminals form cell to ground

X

X

**Current Capability**

**Grounded Hexport**

X

**Plastic Parameters**

Hot Wire Ignitor  
Oxylic Acid

**Manufacturing Study**

Fesability incomplete

**Service Study**

**Part(s) Availability**

**Customer Impact**

Transparent to customer

**Technical Rank**

**Total Rank**

Non-cond Cap

**Make Cup of non-conductive material**

2

Effectiveness Rank	24	nonconductive
Prevents Corrosion	3	Prevents Cell forming. Does not stop external corrosive entry.
Increase Path from B+ to Ground	8	Removes ground conductor from switch cavity.
Reduces Power in Switch	1	No Effect

**Factors**

**Connector Seal**

Ingress of corrosives causes ground path.

**Kapton Seal**

Ingress of corrosives causes ground path

**Continuous Power**

To ground circuit	X
To Load circuit	

**Switch Orientation**

Internal path to ground	X
Susceptibility to fluid ingress	
Terminals form cell to ground	X

**Current Capability**

Grounded Hexport

X

**Plastic Params**

Hot Wire Ignition	
Oxyliz Acid	

**Manufacturing Study**

**Service Study**

**Part(s) Availability**

Customer Impact

10 Transparent to customer

Technical Rank

10

Total Rank

**Cost Cup**

**Make Cup Surface Non-Conductive**

Effectiveness Rank	24	nonconductive
Prevents Corrosion	3	
Increase Path from B+ to Ground	8	
Reduces Power In Switch	1	

**Factors**

**Connector Seal**

Ingress of corrosives causes ground path

**Kapton Seal**

Ingress of corrosives causes ground path

**Continuous Power**

To ground circuit	X
To Lead circuit	

**Switch Orientation**

Internal path to ground	X
Susceptibility to fluid ingress	
Terminals form cell to ground	X

**Current Capability**

Grounded Hexport	X	Removes grounded conductor from switch cavity
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**Plastic Params**

Hot Wire Ignition	
Oxalic Acid	

**Manufacturing Study**

**Service Study**

**Part(s) Availability**

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

3713 8506

## **Brake Pressure Switch Questions:**

Can BRAKE PRESSURE SWITCH function be removed from power feed circuit and placed in ground return circuit of the servo clutch?

At a minimum the following would be required:

### **SPEED CONTROL SERVO**

Redesign the speed control electronic

1. New board layout
2. New ROM
3. New software strategy for deactivation switch function
4. Additional isolated ground circuit

Manufacturing plant equipment effected

1. Process equipment for new board layout
2. Test equipment for new deact switch strategy

Estimate 12 months minimum to develop and prove-out.

### **WIRING HARNESS(S)**

Additional wiring circuit for ground circuit through deact switch. More than one harness maybe be effected. HSE would need to reply.

### **SERVICE TEST EQUIPMENT:**

Field/service equipment would not work properly for the deactivation switch function.

### **EMERG CONSIDERATIONS:**

With switching the power circuit, a wiring harness short to ground would make the speed control system inoperative.

With switching the ground circuit, a wiring harness short to ground would override the function of the deactivation switch.

Based on a minimum of 12 months to design and prove out required changes to the servo; this is not compatible with a near term implementation.

Can BRAKE PRESSURE SWITCH function be moved to the ground circuit of the speed control servo without any changes?

NO; Every time the deactivation switch is cycled, the speed control system would reset itself. The vehicle set speed memory would be lost. RESEND function would not work. Driver would have to press "ON" and "SET" to re-engage the speed control system instead of just pressing the "RESUME" or "SET".

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MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 02/04/99 11:21:04  
To: CSTEVEN7--DRBN005 Stevens, Craig JNEME --DRBN005 Neme, Joseph  
DBUDZYN8--VISTEON Budzynski, Dan PSTOKES --VISTEON Stokes, Paul  
SLAROUCH--FORDNA1 LaRousc, Steve FPORTER --DRBN007  
RENGLIS1--DRBN005 English, Rob SSALTER --DRBN005 Salter, Stuart  
NLAPPOINT--DRBN005 LaPointe, Norman TMASTERS--DRBN005 Masters, Tom  
SREIMERS--DRBN007  
cc: DGOEL --DRBN005 LBROWN --DRBN005  
SCOLE1 --DRBN005 JKAFATI --DRBN004 Kafati, Joseph  
SREIMERS--DRBN007 Reimers, S. J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Pressure Switch Investigation  
A kick-off meeting is being planned for this afternoon to address a NHTSA investigation. Meeting is at 2pm today in building 5. Room to be determined in following meeting notice. Your attendance or your representative is required.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 ;>

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 02/04/99 11:29:14  
To: FPORTER --DRBN007 Frederick J. Porte DGOEL --DRBN005  
LBROWN --DRBN005 CSTEVEN7--DRBN005  
JNEME --DRBN005 DBUDZYN8--VISTEON  
PSTOKES --VISTEON SLAROUCH--FORDNA1  
RENGLIS1--DRBN005 SSALTER --DRBN005  
NLAPPOINT--DRBN005 TMASTERS--DRBN005  
SREIMERS--DRBN007 Steve Reimers SCOLES --DRBN005  
JKAFATI --DRBN004  
FROM: Steve Reimers USAET(UTC -05:00)  
Requester: Steve Reimers  
Date to be scheduled: 02/04/99  
Starting time: 02:00 PM  
Ending time: 03:00 PM  
Location: building 5 conf rm 3A039  
Subject: Brake Pressure Switch  
Purpose: Kick-off meeting for Investigation of Brake Pressure switch  
in response to NHTSA investigation.  
1. Develop work plan  
2. Identify addition team players  
3. Establish meeting schedule and location.  
\*\*\*\*\*  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 ;>

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 02/04/99 16:48:19  
To: CSTEVEN7--DRBN005 JNEME --DRBN005  
SLAROUCH--FORDNA1 FPORTER --DRBN007 Frederick J. Porte  
RENGLIS1--DRBN005 SSALTER --DRBN005  
NLAPPOINT--DRBN005 TMASTERS--DRBN005  
JKAFATI --DRBN004 SREIMERS--DRBN007 Steve Reimers  
TSCHRODY--VISTEON FKOHL --DRBN007 Fred Kohl  
TBAZIL --DRBN005 JMGCINERN--DRBN005

DBUDZYNS-VISTEON                    PSTOKES -VISTEON  
DGOEL -DRBN005                    LBROWN -DRBN005  
SCOLEI -DRBN005                    HWELFER3-DRBN006  
FROM: Steve Reimers                    USAET(UTC -05:00)

Requester: Steve Reimers  
Date to be scheduled: 02/05/99  
Starting time: 02:00 PM  
Ending time: 03:00 PM  
Location: building 5 3A039  
Subject: Brake Pressure Switch  
Purpose: Develop Work Plan.

\*\*\*\*\*  
Steve Reimers                    building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG-FROM: JMCINERN-DRBN005 TO: SREIMERS-DRBN007                    02/04/99 17:04:07  
To: SREIMERS-DRBN007

\*\*\* Reply to note of 02/04/99 16:48  
FROM: John McInerny                    USAET(UTC -05:00)  
Subject: Brake Pressure Switch  
Thanks for the quick meeting set-up!

Regards,  
John McInerny:Tech Specialist-Safety,LVC-OFD Safety and Police  
Engineering. 313-322-0276, Pager:313-795-9243 or PAGENET. "Cell"  
phone:313-715-8512,"FORD-Building the Safest Cars in the World"

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MSG-FROM: SLAROUCH-FORDNA1 TO: SREIMERS-DRBN007                    02/05/99 08:28:32

To: SREIMERS-DRBN007 'Steve Reimers'  
From: LaRouche, Steve (S.)  
Subject: RE: Brake Pressure Switch

Steve: I noticed that you have sent meeting notifications to CSTEVEN7. Are  
you by any chance trying to contact the AVT materials engineer responsible  
for the brake switch? If so, his name is Greg Stevens, and his PROFS ID is  
CSTEVEN7.

Steve LaRouche                    (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 845-4876                    (313) 322-1614 FAX

-----Original Message-----

From: Steve Reimers [mailto:SREIMERS.DRBN007@ovvm.gw.ford.com]  
Sent: Thursday, February 04, 1999 11:48 AM  
To: CSTEVEN7.DRBN005@ovvm.gw.ford.com; JNEME.DRBN005@ovvm.gw.ford.com;  
slarouch@mail.ford.com; FPORTER.DRBN007@ovvm.gw.ford.com;  
RENGLIS1.DRBN005@ovvm.gw.ford.com; SSALTER.DRBN005@ovvm.gw.ford.com;  
NLAPOINT.DRBN005@ovvm.gw.ford.com; TMASTER5.DRBN005@ovvm.gw.ford.com;  
JKAFAT1.DRBN004@ovvm.gw.ford.com; SREIMERS.DRBN007@ovvm.gw.ford.com;  
tbrody@visteon.com; FKOHL.DRBN007@ovvm.gw.ford.com;  
TBAZIL.DRBN005@ovvm.gw.ford.com; JMCINERN.DRBN005@ovvm.gw.ford.com;  
dbudzyns@visteon.com; pstokes@visteon.com;  
DGOEL.DRBN005@ovvm.gw.ford.com; LBROWN.DRBN005@ovvm.gw.ford.com;  
SCOLEI.DRBN005@ovvm.gw.ford.com; HWELFER3.DRBN006@ovvm.gw.ford.com  
Subject: Brake Pressure Switch  
Requester: Steve Reimers  
Date to be scheduled: 02/05/99

Starting time: 02:00 PM  
Ending time: 03:00 PM  
Recurrence: Single event  
Location: building 5 3A039  
Subject: Brake Pressure Switch  
Purpose: Develop Work Plan.  
Recurrence: Single event

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MSG FROM: SREIMERS--DRBN007 TO: JMCINERN--DRBN005 02/05/99 12:26:41  
To: JMCINERN--DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake P-Switch  
Please also collect Speed Control Modules from junkyards.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: JNEME --DRBN005 02/08/99 10:33:11  
To: JNEME --DRBN005 Name, Joseph  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brk Pressure Switch  
Joe, Have the events occurred on ONLY vehicles with ABS?  
Steve Reimers building 5 3C043  
AVT Chassis E/B System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: WAHRAMCZ--DRBN005 TO: SREIMERS--DRBN007 02/08/99 14:33:31  
To: JNEME --DRBN005  
cc: SREIMERS--DRBN007  
\*\*\* Reply to note of 02/08/99 10:33  
FROM: William Abramczyk USAET(UTC -05:00)  
Subject: Brk Pressure Switch  
I do not know, I have just forwarded you a file: filtered.xls with the VIN's  
and the data scripted.  
William M. Abramczyk  
Automotive Safety Office-Mall: 500 Fairlane Plaza South (FPS)  
Car Safety Investigations Dearborn, MI  
Phone (313) 322-3284 Fax (313) 594-2268

---

MSG:FROM: I2060625--EXTERNAL TO: SREIMERS--DRBN007 02/09/99 19:54:41  
To: FPORTER --FORDMAIL, Fred Porter ( For SREIMERS--FORDMAIL, Steve Reimers ( F  
From: Rahman, Aziz  
Subject: Actions from 2/9/99 CRL Visit  
To: "Steve LaRouche ( Ford )" <alarouch@ford.com>  
1. Provide Steve L with 2 switches from 92/93 Town Cars with varying mileage  
for Kapton wear study - Aziz  
2. Complete subjective "Brittleness" evaluation for above two parts +  
Memphis part + parts D & F - Steve L  
3. Complete Kapton Topography study with Cedeycs on all parts above except  
Memphis part. - Steve L  
4. Obtain update on 2 resistivity tests in progress at TI - Aziz  
5. Document data to date from Allan Janotik test - Aziz  
6. Follow up with Dupont on change in Kapton properties with time/temp in  
aged Brake Fluid - Aziz

7. Annex revising present Allan J. test to expose switch to high temp. -

Aziz

Regards

Aziz

---

MSG FROM: FPORTER -DRBN007 TO: SREIMERS -DRBN007 02/08/99 17:12:26

To: DGOEL -DRBN005 SREIMERS -DRBN007

FROM: F. J. Porter USAET(UTC -05:00)

Subject: Technical Review Meeting

Regards,

Fred Porter OV - fpoter fpoter@ford.com

Chassis E/E Systems Applications (313)845-3722

Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4143

\*\*\* Forwarding note from LGRE3 -DRBN006 02/08/99 16:31 \*\*\*

To: PPAREKH -DRBN006 Prithviraj Parekh JPASKUS -DRBN005

MZEVALKI -DRBN005 CTESKE -DRBN005

MRENCCI -DRBN005 SCOLE1 -DRBN005

WBOHAN -DRBN005 JBADLEY -DRBN006 Joe Bradley

JLOGEL -DRBN005 RENGLISI -DRBN005

RNEVI -DRBN005 WABRAMCZ -DRBN005

TBAZIL -DRBN005 GOSWALT -DRBN005

FPORTER -DRBN007 JNEMB -DRBN005

JMCINERN -DRBN005 ZDEERING -DRBN005

MOSULLIV -DRBN006 Mike Sullivan TMASTERS -DRBN005

PSMITH4 -DRBN005 FCONDON -DRBN005

PVEGH -DRBN005

cc: FRC/Tech Review Meeting Attendees

FROM: Larry Gee USAET(UTC -05:00)

Requester: Joe Bradley

Date to be scheduled: 02/11/99

Starting time: 04:00 PM

Ending time: 05:00 PM

Location: Building #1, Executive Conf. Rm. 13E112

Subject: Technical Review Meeting

Purpose: 1992-1993 Town Car Under Hood Fires

\* \* \* \* \*

Regards,

Larry Gee

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MSG FROM: FPORTER -DRBN007 TO: SREIMERS -DRBN007 02/09/99 18:27:09

To: SREIMERS -DRBN007

FROM: F. J. Porter USAET(UTC -05:00)

Subject: CONNECTOR F2AB 14A464 ADA

Regards,

Fred Porter OV - fpoter fpoter@ford.com

Chassis E/E Systems Applications (313)845-3722

Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4143

\*\*\* Forwarding note from NLAPPOINT -DRBN003 02/09/99 14:11 \*\*\*

To: JNEMB -DRBN005 JMCINERN -DRBN005

FGAYMIER -DRBN007 MLUNN -DRBN004

FPORTER -DRBN007 WDIXONZ -DRBN004

TMASTERS -DRBN005 RENGLISI -DRBN005

cc: JKAPATI -DRBN004 SLAROUCH -FORDNA1

CTHOMASS -DRBN005 NLAPPOINT -DRBN005

CKILGORE-DRBN005  
FROM: Norman LaPointe USAET(UTC -05:00)  
Subject: CONNECTOR P2AB 14A464 ADA  
Meeting 2-12-1999 w/UTA, 1:00PM at Central Laboratories, Small Conf. Rm.  
Agenda:  
1. Obtain drawings for P2AB-14A464-ADA connector & components from UTA.  
2. Obtain components for above connector (5 sets).  
3. Obtain and discuss FMEA.  
4. Discuss sealing details & history of above connector.  
5. Obtain the visual characteristics of: water, brake fluid, or other materials that could enter the connector or the wires.  
6. Discuss assembly difficulties to seal joint.  
7. Hand off 6 press. switch assemblies to UTA.  
8. Develop game plan to disassemble and examine the submitted connector from Reddick voh.  
FAX copy of above sent to Dan Kulkarni-UTA, Dick Badkey-UTA.  
Regards,  
Norman LaPointe  
PHONE 59-42686 FAX 313-337-8256

---

MSG:FROM: TBAZIL -DRBN005 TO: SREIMERS-DRBN007 02/10/99 13:58:51  
To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN005  
FROM: Tom Basil USAET(UTC -05:00)  
Subject: Brake Pressure Switch Question  
DRAFT  
Yes, The switch sees the same pressure as the rest of the circuit.  
I am confirming that ABS was optional.  
Town Car was also available with Traction control.  
Have a good day!

Thomas E. Basil (313) 59-47547 Lrg & Lux Car OFD Brake/Veh Supp  
Drop 1229-LVC, Cube 24-H36, fax 62-16675, pager (888) 375-6449  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/09/99 18:13 \*\*\*  
To: TBAZIL --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Pressure Switch Question  
Does ABS pressure modulation get to this switch?  
Was ABS standard on 92/93 Towncar?  
Were there other ABS options available on Towncar?  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG:FROM: I2060625-EXTERNAL TO: SREIMERS-DRBN007 02/12/99 09:08:09  
To: FPORTER -FORDMAIL Fred Porter ( For SLAROUCH-FORDMAIL 'Steve LaRouch ' F  
SREIMERS-FORDMAIL 'Steve Reimers ( FNLAPOINT-FORDMAIL 'Norm LaPointe ( F  
cc: OTFW@GYK-EXTERNAL Sharpe, Robert  
From: Rahman, Aziz  
Subject: Phone #  
cc: "Sharpe, Robert" <sharpe@email.rr.com>  
I now have a cellular phone and pager. The numbers are:  
Phone: 508-208-6119  
Pager: 1-800-946-4646, pin # 6042042

Can we get together today to review actions in progress and plans for next week? I believe Fred will be out of office next week, and I want to make sure we capture all the actions necessary before he leaves.

Thanks

Aziz.

---

MSG:FROM: I2060625--EXTERNAL TO: SREIMERS--DRBN007 02/12/99 09:42:39  
To: FPORTER--FORDMAIL Fred Porter ( For NLAPONT--FORDMAIL Norm LaPointe ( F  
SLAROUCH--FORDMAIL Steve LaRouche ( SREIMERS--FORDMAIL Steve Reimers ( F  
From: Rahman, Aziz

Subject: Brake Pressure Switch Temp Test

Allan and I started a temperature test yesterday in AVT BLDG 5 lab. We injected brake fluid into the base area and hooked up one of the switch terminals to 24 vdc, while grounding the switch via the hexport. The ambient was set at 100 C. The initial current draw was 1mA.

After about 3 hours, most of the brake fluid had evaporated and very little was left in the base. We need to find a way to keep the brake fluid in the base. I think even if we use a connector, there will still be evaporation loss. I was thinking about manually replenishing lost fluid periodically.

Any ideas?

Additionally, Norm and I discussed the safety aspect and decided that we will not run the temp test over the weekend or overnight.

In order to increase our sample size for test, I have requested a test manifold from Attleboro. We can use this to test multiple switches at the same time. This manifold should arrive today.

FYI, my e-mail address is aziz@tl.com

Regards

Aziz.

---

MSG FROM: SREIMERS--DRBN007 TO: GSTEVEN1--DRBN005 02/13/99 15:55:19  
To: GSTEVEN1--DRBN005  
FROM: Steve Reimers USART(UTC -05:00)

Subject: Assistance from Dow Chemical

In several of the Brake Pressure Switch team meetings it has been suggested that we get Dow to assist us. I believe you may have already contacted them. Let's get them on-board by Tuesday if they aren't already. Ask them how a fire can be started with this switch given the following constraints; 1. Constant Battery voltage applied, circuit fused at 15 amps, switch hydraulic connection constantly connected to ground potential, vehicle underhood temperature, switching an inductive load of about 0.5 amps, load current flows only when speed control is active, the switch cavity contains a black material containing at least copper, zinc, sulfur, and brake fluid ( probably containing water). Let me know if there are any roadblocks to getting Dow here.

Steve Reimers building 5 3C043

AVT Chassis E/B System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

---

MSG FROM: SREIMERS--DRBN007 TO: FKOHL --DRBN007 02/13/99 16:43:23  
To: FKOHL --DRBN007  
FROM: Steve Reimers USART(UTC -05:00)

Subject: Alternate Dash Switch

Is the brake pedal mounted switch a viable replacement for the Pressure switch as far as the speed control electronics is concerned? Is this switch input compatible with the speed controls in 92 and 93 town cars?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: I2060625--EXTERNAL 02/13/99 16:47:32  
To: I2060625--EXTERNAL Aziz Rahman, Texas  
cc: OTFW0QYK--EXTERNAL ROb Sharpe,Texas I  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: TI actions  
Fred mentioned you may be already working on the following.  
Plausible wearout explanation for leaking switches.  
Recommendations to increase life say by a factor of 3.  
Matrix of tests planned and in progress.

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: TMASTERS--DRBN005 02/13/99 08:21:08  
To: TMASTERS--DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Alternate Decac Switch  
Can we start somebody looking into the details of a wiring design to use this a  
switch?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from FKOHIL --DRBN007 02/13/99 08:12 \*\*\*

To: SREIMERS--DRBN007  
cc: DBUDZYNS--VISTEON TSCHRODLY--VISTEON  
FKOHIL --DRBN007  
FROM: Fred Kohl USAET(UTC -05:00)

Subject: Alternate Decac Switch  
Yes, the pedal mounted switch currently used is compatible electrically with  
the 92 and 93 Town Car.

I do not know if mounting in the vehicle and wiring harness requirements can  
easily be met. Chassis would have to answer the mounting / packaging questions  
and BESE would have to address the wiring harness issues.

The current Town Car decac switch engineer is Mike Salama (MSALANTA) 84-54007.

Regards, Fred Kohl, Precision Speed Control (Panther)  
PROPS ID: FKOHIL Phone TBD Pager (866) 377-6280  
IBM Mail(USPMCBIZ)  
Mailing Address: ETC C375

\*\*\* Forwarding note from SREIMERS--DRBN007 02/13/99 16:43 \*\*\*

To: FKOHIL --DRBN007  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Alternate Decac Switch

Is the brake pedal mounted switch a viable replacement for the Pressure switch  
as far as the speed control electronics is concerned? Is this switch input com  
patible with the speed controls in 92 and 93 town cars?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: FKOHIL --DRBN007 TO: SREIMERS--DRBN007 02/13/99 08:12:37

To: SREIMERS--DRBN007  
cc: DBUDZYNS--VISTEON TSCHRODY--VISTEON  
FKOHL --DRBN007  
FROM: Fred Kohl USART(UTC -05:00)  
Subject: Alternate Dash Switch  
Yes, the pedal mounted switch currently used is compatible electrically with  
the 92 and 93 Town Car.  
I do not know if mounting in the vehicle and wiring harness requirements can  
easily be met. Chassis would have to answer the mounting / packaging questions  
and BESE would have to address the wiring harness issues.  
The current Town Car dash switch engineer is Mike Selama (MSALANTA) 84-54007.  
Regards, Fred Kohl, Precision Speed Control (Panther)  
PROPS ID: FKOHL Phone THD Pager (888) 377-6280  
IBM Mail(USFMCBIZ)  
Mailing Address: RTC C375  
\*\*\* Forwarding note from SREIMERS--DRBN007 02/13/99 16:43 \*\*\*  
To: FKOHL --DRBN007  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Alternate Dash Switch  
Is the brake pedal mounted switch a viable replacement for the Pressure switch  
as far as the speed control electronics is concerned? Is this switch input com-  
patible with the speed controls in 92 and 93 town cars?  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

---

MSG FROM: FPORTER --DRBN007 TO: SREIMERS--DRBN007 02/12/99 16:40:57  
To: SREIMERS--DRBN007  
FROM: P. J. Porter USAET(UTC -05:00)  
Subject: weekly task force meetings  
Regards,  
Fred Porter OV - porter fpporter@ford.com  
Chassis E/E Systems Applications (313)845-3722  
Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145  
\*\*\* Forwarding note from JNEME --DRBN005 02/12/99 13:25 \*\*\*  
To: ZDEERING--DRBN005  
cc: TMASTERS--DRBN005 FPORTER --DRBN007  
FROM: Joseph S. Name USAET(UTC -05:00)  
SUBJECT: weekly task force meetings  
Ziaundra,  
Please get with Kelly to confirm Joe/Ann attendance then send out  
meeting notices for the 92/93 Towncar Underhood Fire Task Force Update  
with Jack and Ann. We have Jack and 13E112 for every Monday at 3:30 for  
1/2 hour starting 2/22/99 (note: first meeting will be for 1 hour).  
Joseph S. Name  
LVC - Safety  
Phone: 39-08133, Fax: 62-18147, E-Mail:jneme@ford.com  
Location: MD 1255/Cube 2M37, Building #2 Textpager:313-795-7003

---

MSG FROM: FPORTER --DRBN007 TO: SREIMERS--DRBN007 02/13/99 16:33:31  
To: GSTEVEN1--DRBN005 Stevens, Gregory  
cc: SREIMERS--DRBN007  
FROM: P. J. Porter USAET(UTC -05:00)  
Subject: (U) Dow Meeting



> turns off (de-energize) the clutch circuit. What does the software say?  
> Also, is the timing different is we get a De-act switch signal?  
>  
> Regards, \_\_ Fred Kohl, Precision Speed Control (Panther)  
> PROFS ID: PKOHL Phone TBD Pager (888) 377-6280  
> IBM Mail(USFMCBJZ)  
> Mailing Address: ETC C375  
> \*\*\* Forwarding note from SREIMERS--DRBN007 02/09/99 18:08 \*\*\*  
> To: PKOHL --DRBN007  
>  
> FROM: Steve Reimers USAET(UTC -05:00)  
> Subject: More Questions  
> Would a customer know if the speed control clutch drive output was stuck  
> on?  
> Is a relay between the Brake P switch and fuse an feasible fix?  
> What kind of timing is expected between when the BOG turns off the clutch  
> drive  
> output and when the Brake P switch opens?  
> thanks,  
>  
> Steve Reimers building 5 3C043  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS reimers@ford.com fax 39-03286 ;>

---

MSG:FROM: SLAROUCH-FORDNA1 TO: SREIMERS--DRBN007 02/15/99 08:30:47  
To: SREIMERS--FORDMAIL Reimers, Steve (S.)

From: LaRouche, Steve (S.)  
Subject: RE: Brake Pressure Switch Sulfur  
Steve: We have found sulfur in all the other switches. We haven't  
identified a source yet. I hope that Dow or DuPost can give us some ideas.  
Steve LaRouche (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 845-4876 (313) 322-1614 FAX

—Original Message—

From: Steve Reimers [mailto:reimers@gw.ford.com]  
Sent: Monday, February 15, 1999 8:15 AM  
To: LaRouche, Steve  
Subject: Brake Pressure Switch Sulfur  
You mentioned sulfur as one of the contaminants found in the Memphis switch.  
Did you find sulfur in any others? Have you identified the likely source?

thanks,  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 ;>

---

MSG:FROM: E2060625-EXTERNAL TO: SREIMERS--DRBN007 02/15/99 14:34:22  
To: SREIMERS--FORDMAIL 'Steve Reimers ( F'

From: Rahman, Aziz  
Subject: Correlation Timeline  
Steve, I expect that we will develop a correlation for kapton wear, between  
time/mileage in the field, vs # of cycles in the TI lab by 2/29. This  
primarily involves Central Labs looking at a quantity of switches from the  
field and the TI lab. We will factor in the DOE test parts also in this  
correlation.

Regards  
Aziz.

---

MSG FROM: FKOHL -DRBN007 TO: SREIMERS-DRBN007 02/15/99 10:51:04  
To: SREIMERS-DRBN007  
FROM: Fred Kohl USAET(UTC -05:00)  
Subject: RE: More Questions  
Steve; we do not monitor the state of the clutch driver..  
Regards, Fred Kohl, Precision Speed Control (Panther)  
PROPS ID: FKOHL Phone TBD Pager (888) 377-6280  
IBM Mail(USFMCBIZ)  
Mailing Address: ETC C375  
\*\*\* Forwarding note from TSCHRODY-VISTEON 02/15/99 10:11 \*\*\*  
To: FKOHL -FORDMAIL.Kohl, Fred (F.H.)  
From: Schrod, Thomas (T.P.)  
Subject: RE: More Questions  
We do not monitor the state of the clutch driver.  
Regards,  
Thomas Schrod  
Product Design Engineer ETC, C-395  
Precision Speed Control Tel: (313) 323-9695  
Visteon Automotive Systems Fax: (313) 322-3529  
> -----Original Message-----  
> From: Fred Kohl [SMTP:fkohl@gw.ford.com]  
> Sent: Monday, February 15, 1999 9:29 AM  
> To: tschrody@vistecm.com  
> Cc: fkohl@gw.ford.com  
> Subject: RE: More Questions  
>  
> Tom, I told Steve that the customer would not know if or internal driver  
> for the clutch output was stuck on. The BOO signal would cause the motor  
> to be driven back to idle. Also, the brake pressure switch when  
> activated would open the feed to the clutch circuit.  
>  
> I told him that there is NO warning light for faults.  
>  
> Another question Steve had: does the speed control module check to see if  
> the driver circuit for the clutch is turned on when it should not be.  
> Does it set an internal code or make the system trip?  
>  
> Steve; mentioned that ABS units check the output state and sets codes if  
> there are faults detected.  
>  
> Regards, Fred Kohl, Precision Speed Control (Panther)  
> PROPS ID: FKOHL Phone TBD Pager (888) 377-6280  
> IBM Mail(USFMCBIZ)  
> Mailing Address: ETC C375  
> \*\*\* Forwarding note from SREIMERS-DRBN007 02/15/99 08:57 \*\*\*  
> To: FKOHL -DRBN007  
>  
> \*\*\* Reply to note of 02/15/99 08:21  
> FROM: Steve Reimers USAET(UTC -05:00)  
> Subject: RE: More Questions  
> If the clutch output driver gets stuck "ON" would the customer be aware of

> it?  
> Would the speed control detect this fault? ...light a warning lamp? ...log  
> a fa.  
> nlt code? Any action on PRACAS?  
>  
> Steve Reimers building 5 3C043  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

---

MSG:FROM: I2060625--EXTERNAL TO: SREIMERS--DRBN007 02/15/99 15:14:04

To: SREIMERS--FORDMAIL Steve Reimers ( F

From: Rahman, Aziz

Subject: F2VC Materials List.xls

<<F2VC Materials List.xls>>

Please let me know if you cannot open the file.

Regards

Aziz

Attachments sent separately:

Data Type File Name

BINARY P2VCMATE.XLS\_PC

---

MSG FROM: SREIMERS--DRBN007 TO: FKOHL --DRBN007 02/15/99 18:14:20

To: FKORL --DRBN007

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Speed control servo

What is the inductance and resistance of the clutch? What is used to clamp the flyback voltage? What is the magnitude of the flyback voltage?

I have collected at least ten speed servos from junk yards. Can you test them for function?

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

---

MSG FROM: DB7AWAYR--DRBN007 TO: SREIMERS--DRBN007 02/15/99 17:22:17

Subject: AWAY Facility/VM messages

This note was generated by the AWAY Facility/VM 5799-FLP (c)IBM Corp.

DO NOT REPLY TO THIS NOTE

AWA110! This mail item is being routed to you from JNEME at DRBN005 on behalf of FPORTE at DRBN007.

To: TMASTERS--DRBN005 FPORTE --DRBN007

cc: JMCINERN--DRBN005 RNEVI --DRBN005

JNEME --DRBN005

FROM: Joseph S. Neme USAET(UTC -05:00)

SUBJCT: (C) Questionnaire

Gentlemen,

We have a central contact point for undehood fires at FCSD litigation prevention. He will work with RA or design analysis to investigate alleged undehood fires.

What is needed from you tomorrow is:

1) list of questions/info you need to know regarding a fire like

- where did fire originate
- was the vehicle running, parked, on/off... if off, how long
- did you notice brake warning lamp or speed control inop prior to fire

- VIN #, Miles, location of incident  
- where is the vehicle now  
2) identify a "flag" to signal a vehicle investigation like  
- underhood fire  
- vehicle available  
- 92-93 Town Car, Crown Victoria, Grand Marquis  
- fires that totaled a vehicle or don't know origin  
3) identify vehicles we want to have EA have a look at right away  
(suggest working with ASO on present list of alleged incidents)  
4) list of special request from the investigator... ie which parts to get  
We need all this info tomorrow so that we can kick things off.. thanks  
Call me if you have questions  
Joseph S. Name  
LVC - Safety  
Phone: 39-08133, Fax: 62-18147, E-Mail:jname@ford.com  
Location: MD1255/Cube 2M37, Building #2 Textpager:313-795-7003

---

MSG:FROM: I2060625--EXTERNAL TO: SREIMERS--DRBN007 02/15/99 20:23:01  
To: FPORTER --FORDMAIL Fred Porter ( For NLAPOINT--FORDMAIL Norm LaPointe ( F  
SLAROUCH--FORDNA ) Steve LaRouch ( SREIMERS--FORDMAIL Steve Reimers ( F  
From: Rahman, Aziz

Subject: Brake Pressure Switch Log

Attached is a log file with information on the devices under review. It also contains switches received today from John Moloney. In addition to Steve L's analysis summary file, I will be using this log to track incoming parts.  
Please advise if I have missed any data.

<<Brake Pressure Switch Log>>

Please let me know if you cannot open the file. Steve/Norm, can you please e-mail me the last update on your analysis summary file? Thanks.

Regards

Aziz,

Attachments sent separately:

Data Type	File Name
BINARY	BRAKEPRE.XLS_PC

---

MSG FROM: DB7AWAYR--DRBN007 TO: SREIMERS--DRBN007 02/16/99 13:41:47

Subject: AWAY Facility/VM messages

This note was generated by the AWAY Facility/VM 5799-FLP (c)IBM Corp.

DO NOT REPLY TO THIS NOTE

AWA110I This mail item is being routed to you from SCOLE1 at DRBN005 on behalf of FPORTER at DRBN007.

To: FPORTER--DRBN007

cc: TMASTERS--DRBN005 TDONOVAN--DRBN005  
DGOEL --DRBN005

From: Sam L. Cole USAET(UTC-05:00)

Subject: (U)

I UNDERSTAND THAT THERE WILL BE A FOLLOW UP MEETING WITH JACK PASKUS THIS FRIDAY ON THE TOWN CAR INVESTIGATION. I MET WITH JACK TODAY FOR A 1 ON 1, AND HE REQUESTED SOME SPECIFIC INFO. AT FRIDAYS MEETING, PLEASE BRING A SAMPLE SWITCH TO SHOW JACK.

ALSO, HE IS INTERESTED IN KNOWING OUR PROGRESS AND INVESTIGATING IF THE PREVIOUS PROBLEM WITH THE INTERNAL COMPONENTS BREAKING LOOSE IS A POTENTIAL CAUSE OF THIS CONCERN. PLEASE BE PREPARED TO DISCUSS THIS ON

FRIDAY THANKS.  
Thank You,  
Sam  
Ext: 21959  
BLDG. 2, 22J31 - MDW 1220 - SCOLEI@FORD.COM

---

MSG FROM: DB7AWAYR-DRBN007 TO: SREIMERS-DRBN007 02/16/99 16:37:23  
Subject: AWAY Facility/VM messages  
This note was generated by the AWAY Facility/VM 5799-FLP (c)IBM Corp.

DO NOT REPLY TO THIS NOTE

AWA110! This mail item is being routed to you from ZDEERING at DRBN005  
on behalf of FPORTER at DRBN007.

To: JFASKUS -DRBN005 Jack Faskus MZEVALKI-DRBN005 Mike Zevalkirk  
MRENUCCI-DRBN005 Mike Renucci CTESKY -DRBN005 Chuck Teske  
SCOLEI -DRBN005 Sam L. Cole WBOHAN -DRBN005 Bill Bohan  
AONEILL -FORDNA1 JBRADLEY-DRBN006  
JLOGEL -DRBN005 Jay Logel RENGLISI-DRBN005 Rob English  
RNEVI -DRBN005 Ray Nevi WAERAMCZ-DRBN005 William Abramczyk  
TBAZIL -DRBN005 Thomas Basil GOSWALT -DRBN005 G. Oswalt  
FPORTER -DRBN007 JNEME -DRBN005 Joseph Neume  
JMCINERN -DRBN005 John McInernay TDONOVAN -DRBN005 Tim Donovan  
ZDEERING -DRBN005 Z. Deering TMASTERS -DRBN005 Thomas Masters  
PSMITH4 -DRBN005 Peter Smith FCONDON -DRBN005 Frank Condron  
PVEGH -DRBN005 Paul Vegg MHARRIGA -DRBN005 M. Harrigan  
cc: CVOKAL -DRBN005 Connie Vokal LLEZOTTE -DRBN005 Linda Lezotte  
MGHAMZA1 -DRBN005 Marie Gramza JDONES10 -DRBN005 Jean Jones  
JBUCZYNS -DRBN005 Jayne Buczynski AEXEL -DRBN005 Ariene Excel  
KJOHNS54 -DRBN005 Kathleen Johnson  
FROM: Z Deering USAET(UTC -05:00)

Requester: Z. Deering

Date to be scheduled: 02/19/99

Starting time: 04:00 PM

Ending time: 05:00 PM

Location: Bldg. #1 ECR 13E112

Subject: 1992-93 Linc. Town Car Underhood Fires (NHTSA Inq. PB98-055)

Purpose: Status Update

NOTE: Time Correction

\*\*\*\*\*

Regards,  
Zandra Deering

---

MSG FROM: SREIMERS-DRBN007 TO: JBRADLEY-DRBN006 02/16/99 17:00:16  
To: JBRADLEY-DRBN006 RNEVI -DRBN005  
JLOGEL -DRBN005  
cc: JNEME -DRBN005 FPORTER -DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Town Car Oasis message  
The proposed wording is below for your approval.  
Steve Reimers building 5 3C043  
AVT Chassis/E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from TMASTERS -DRBN005 02/16/99 14:26 \*\*\*  
To: FPORTER -DRBN007 SREIMERS -DRBN007  
FROM: Tom Masters USAET(UTC -05:00)

Metallurgy Section, Central Laboratory, Room N410  
(313) 845-4876 (313) 322-1614 FAX

—Original Message—

From: Steve Reimers [mailto:sreimers@gw.ford.com]

Sent: Wednesday, February 17, 1999 9:45 AM

To: alrouch@mail.ford.com

Subject: RE: (U)

What caused the corrosion?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from SLAROUCH-FORDMAIL 02/17/99 08:18 \*\*\*  
To: SREIMERS-FORDMAIL Reimers, Steve (S.)  
From: LaRouche, Steve (S.)  
Subject: RE: (U)

Steve: The switch in question is switch F. The copper-beryllium arm of the movable contact separated from the brass base. Now that we have had a chance to look at it in closer detail, it appears that the arm separated due to a loss of material thickness from corrosion. We have also found evidence of stress corrosion cracking in the stationary contact. We did not see any evidence of heat or arc damage in this switch. It leaked like the arm separated, fell away, and stuck to the wall of the switch cavity.

Steve LaRouche (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 845-4876 (313) 322-1614 FAX

—Original Message—

From: Steve Reimers [mailto:sreimers@gw.ford.com]

Sent: Tuesday, February 16, 1999 6:13 PM

To: jneme@gw.ford.com; nlapoint@gw.ford.com; rnevi@gw.ford.com;  
slarouch@mail.ford.com; Aziz Rahman, Texas

Subject: (U)

Can you help me get smart regarding the "LOOSE METAL PART" mentioned above?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from SCOLE1 -DRBN005 02/16/99 18:04 \*\*\*  
To: SREIMERS -DRBN007  
cc: DGOEL -DRBN005  
From: Sam L. Cole USAET(UTC -05:00)

Subject: (U)

THE PREVIOUS CONCERN OF THE "LOOSE METAL PART" WAS MENTIONED IN THE LAST MEETING WITH JACK. HE WILL WANT A FOLLOW UP ON THIS AT THIS FRIDAY'S MEETING. PLEASE GET UP TO SPEED ON THE HISTORY OF THIS CONCERN. IF IT TURNS OUT THAT THIS MAY BE A CAUSE, THEN WE WILL NEED TO KNOW WHEN THE ISSUE WAS IN THE FIELD, WHEN IT WAS FIXED AND HOW MANY ARE OUT THERE TO BE CONCERNED ABOUT. THANKS.

Thank You,

Sam

Ext. 21959

BLDG. 2, 22J31 - MD# 1220 - SCOLE1@FORD.COM

\*\*\* Forwarding note from SREIMERS -DRBN007 02/16/99 16:52 \*\*\*

To: SCOLE1 -DRBN005 DGOEL -DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: (U)

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS steimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 02/15/99 12:44:11  
To: SREIMERS--DRBN007 Steve Reimers JKAFATI--DRBN004  
FROM: Steve Reimers USAET(UTC -05:00)  
Requester: Steve Reimers  
Date to be scheduled: 02/16/99  
Starting time: 02:00 PM  
Ending time: 04:00 PM  
Location: 3a017, bldg 5  
Subject: Dead Switch, Alternative  
Purpose: Joe I have scheduled the room from 2 til 4, pick a time when  
you can meet. The room is also available after 4.  
\*\*\*\*\*

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS steimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: TBAZIL --DRBN005 02/11/99 19:14:07  
To: TBAZIL --DRBN005  
cc: FPORTER --DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: A Possible Corrective Action  
Can you start someone looking at packaging the new deactivation switch that goes on the brake pedal? This approach would eliminate the Brake Pressure switch and replace it with a plug.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS steimers@ford.com fax 39-03286 >

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MSG FROM: SREIMERS--DRBN007 TO: TBAZIL --DRBN005 02/09/99 18:13:57  
To: TBAZIL --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Pressure Switch Question  
Does ABS pressure modulation get to this switch?  
Was ABS standard on 92/93 Towncar?  
Were there other ABS options available on Towncar?  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS steimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: FPORTER --DRBN007 02/04/99 11:29:14  
To: FPORTER --DRBN007 Frederick J. Porte DGOEL --DRBN005  
LBROWN --DRBN005 CSTEVEN7--DRBN005  
JNEME --DRBN005 RENGLIS1--DRBN005  
SSALTER --DRBN005 NLAPPOINT--DRBN005  
TMASTERS--DRBN005 SREIMERS--DRBN007 Steve Reimers  
SCOLE1 --DRBN005 JKAFATI--DRBN004  
DBUDZYNS--VISTEON PSTOKES--VISTEON  
SLAROUCH--FORDNA1  
FROM: Steve Reimers USAET(UTC -05:00)  
Requester: Steve Reimers

Date to be scheduled: 02/04/99  
Starting time: 02:00 PM  
Ending time: 03:00 PM  
Location: building 5 confirm 3A039  
Subject: Brake Pressure Switch  
Purpose: Kick-off meeting for Investigation of Brake Pressure switch  
in response to NHTSA investigation.

1. Develop work plan
  2. Identify addition team players
  3. Establish meeting schedule and location.
- \*\*\*\*\*

Steve Reimers building 5 3C043  
AVT Chassis E/S System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 02/18/99 09:32:41  
To: JNEME --DRBN005 SLAROUCH--FORDNA1  
FPORTER--DRBN007 Frederick J. Porter RENGLISI--DRBN005  
SSALTER--DRBN005 NLAPPOINT--DRBN003  
TMASTERS--DRBN005 JKAFATI--DRBN004  
SREIMERS--DRBN007 Steve Reimers TSCHRODY--VISTEON  
PROHL --DRBN007 Fred Kohl TBAZIL --DRBN005  
JMCINERN--DRBN005 DBUDZYNE--VISTEON  
PSTOKES --VISTEON DGOEL --DRBN005  
LBROWN --DRBN005 SCOLEI --DRBN005  
HWELFER3--DRBN006 GSTEVEN1--DRBN005  
WABRAMICZ--DRBN005 MREESE --DRBN005  
I2060625--EXTERNAL OTFWOGYK--EXTERNAL  
FROM: Steve Reimers USAET(UTC -05:00)

Requester: Steve Reimers  
Date to be scheduled: 02/24/99 - 06/30/99

Starting time: 02:00 PM  
Ending time: 04:00 PM

Location: Bldg 5 3A039  
Subject: Brake Pressure Switch  
Purpose: Team meeting

19 meetings will be scheduled. The dates are:

02/24/99 03/03/99 03/10/99 03/17/99 03/24/99 03/31/99  
04/07/99 04/14/99 04/21/99 04/28/99 05/05/99 05/12/99  
05/19/99 05/26/99 06/02/99 06/09/99 06/16/99 06/23/99  
06/30/99

\*\*\*\*\*

Steve Reimers building 5 3C043  
AVT Chassis E/S System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: I2060625--EXTERNAL TO: SREIMERS--DRBN007 02/18/99 09:27:25  
To: FPORTER--FORDMAIL 'Fred Porter' ( For NLAPPOINT--FORDMAIL 'Norm LaPointe' ( F  
SLAROUCH--FORDNA1 'Steve LaRoucha' ( SREIMERS--FORDMAIL 'Steve Reimers' ( F  
cc: PHB4K5L2--EXTERNAL Beringhouse, Steve OTFWOGYK--EXTERNAL Sharpe, Robert  
From: Rahman, Aziz  
Subject: Switch Evaluation Plan.xls  
cc: "Beringhouse, Steven" <aberlinghouse@email.mc.ti.com>,  
"Dague, Bryan" <b.dague@email.mc.ti.com>,

"Bumann, Russ" <rbumann@email.mc.ti.com>,  
"Sharpe, Robert" <rsharpe@email.mc.ti.com>,  
"McGuirk, Andy" <a-mcguirk@email.mc.ti.com>  
<<Brake Pressure Switch Evaluation Plan.xls>>

Revised to include Switch dissection procedures.

Regards

Axiz

Attachments sent separately:

Data Type	File Name
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BINARY	BRAKEPRE.XLS_PC
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MSG FROM: AJANOTII--DRBN007 TO: SREIMERS--DRBN007 02/18/99 12:42:57

To: SREIMERS--DRBN007

FROM: Allen Janotik USAET(UTC -05:00)

Subject: (U)Brake Pressure Switch Measurements

The brake switch resistance values were measured with the switches laying on the desk surface and the terminals parallel to the desk. Each switch was measured on the same place on the switch body. The same calibrated meter and leads were used for all resistance readings.

Regards,

Allen Janotik

---

MSG FROM: SREIMERS--DRBN007 TO: AJANOTII--DRSN007 02/18/99 16:40:47

To: AJANOTII--DRBN007

FROM: Steve Reimers USAET(UTC -05:00)

Subject: (U)Brake Pressure Switch Measurements

The sludge that is accumulating in these switches will make the resistance measurement position sensitive for the terminal to hex-port threads value. These switches normally sit at an angle with the terminals above horizontal. Please re-do the measurements for all the switches by positioning them at the correct angle and rotating them 360 degrees to determine the minimum and maximum resistance. Note the angle of the minimum using the connector key tab pointing down to the zero resistance. Estimate angle to nearest 45 degrees.

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

\*\*\* Forwarding note from AJANOTII--DRBN007 02/18/99 12:42 \*\*\*

To: SREIMERS--DRBN007

FROM: Allen Janotik USAET(UTC -05:00)

Subject: (U)Brake Pressure Switch Measurements

The brake switch resistance values were measured with the switches laying on the desk surface and the terminals parallel to the desk. Each switch was measured on the same place on the switch body. The same calibrated meter and leads were used for all resistance readings.

Regards,

Allen Janotik

---

MSG FROM: RNEVI --DRBN005 TO: SREIMERS--DRBN007 02/19/99 06:47:04

To: SREIMERS--DRBN007

FROM: Ray Nevi USAET(UTC -05:00)

Subject: Town Car Oasis message

Has this gone out to dealers yet? It looks OK to me.

Regards,

STANDARD OR OPTIONAL FOR 1992, 1993, AND 1994 TOWN CAR.  
I WILL TURN NOW TO ANOTHER TASK, REQUESTED IN THE RECENT MEETING.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from FCONDON -DRBN03 02/19/99 07:29 \*\*\*

To: MREESB -DRBN005  
cc: LSMITH9 -DRBN005

FROM: Frank Condon USAET(UTC -05:00)  
Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

Marty:

92/93/94 TCS was an option. Isn't it still that way?

Regards,

Frank Condon

\*\*\* Forwarding note from MREESB -DRBN005 02/18/99 09:56 \*\*\*  
To: FCONDON -DRBN005 GSTRINGF-DRBN005  
cc: LSMITH9 -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)  
Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

FRANK AND GEORGE, I SEE YOUR NAMES LISTED IN A 1995 MODEL RESIDENT REVIEW, FOR ACTUATION OR BOOSTERS/MASTER CYLINDERS - PANTHER,  
WAS TRACTION CONTROL STANDARD WITH ABS ON 1992, 1993, AND 1994 MODEL TOWN CAR?  
READY TO RECEIVE THE ANSWER, AND/OR GOOD LEADS AND BACKGROUND.  
THANK YOU.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from MREESB -DRBN005 02/18/99 09:49 \*\*\*

To: SREIMERS-DRBN007

cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

I ATTENDED A MEETING ON 1999 FEB 17, AND WAS ASKED TO FIND OUT WHETHER TRACTION CONTROL WAS STANDARD WITH ABS ON 1992, 1993, AND 1994 MODEL TOWN CAR. PAGE 06-09-1 OF THE 1993 TOWN CAR, CROWN VICTORIA, AND GRAND MARQUIS SERVICE MANUAL (1992 JULY) STATES, "THE TOWN CAR IS EQUIPPED WITH A 4-WHEEL ANTILOCK BRAKE SYSTEM (ABS) WITH TRACTION ASSIST (TA) AS AN OPTION." THIS IS PROBABLY THE ANSWER FOR 1992, 1993, AND 1994 MODEL TOWN CAR. I AM CHECKING FURTHER ABOUT THAT, FOR THESE THREE MODEL YEARS.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

---

MSG:FROM: JBRADLEY-DRBN006 TO: SREIMERS-DRBN007 02/18/99 17:58:05

To: KZUBIETA-DRBN006

cc: SREIMERS-DRBN007

FROM: Joe Bradley USAET(UTC -05:00)

Subject: 92/93 Town Car Options?

Kelly, can you look this up and get back with Steve.

Steve, Kelly is offsite until Monday and is getting swamped with requests, we will fit this in with the core work the best we can.

Manager, Recall and Service Programs, Vehicle Serv. & Puma, PCSU

Joe Bradley 33-72487 FAX 84-31024 rm403 DSC2

\*\*\* Forwarding note from SREIMERS-DRBN007 02/18/99 17:13 \*\*\*

To: JBRADLEY-DRBN006  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: 92/93 Town Car Options?  
Was ABS and ABS/TC (TA) optional or standard on any of the Town car series in M  
Y 92 & 93? I know there were 4 types of Town cars... base model, Signature ser  
ies, Cartier, and LTS.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: JJOYCE1-DRBN007 TO: SREIMERS-DRBN007 02/18/99 19:40:43

To: SREIMERS-DRBN007  
cc: FPORTER -DRBN007  
FROM: John Joyce USAET(UTC -05:00)

Subject: (U)Pressure Tests

Steve,

I got your note and will be on vacation tomorrow through Wednesday. Here's  
the info.

The more I think about this, the more I think TC activation may be the  
mechanism.

I am not sure of the order of the things connected and that can influence  
the low frequency amplitude of the signals. But the short answer is to  
instrument for 0-250 Bar and sample at 1 kHz or more.  
Since I'm not sure of where the pressure switch is hydraulically connected  
I'll give you pressures at nodes and states I do know. The worst case for  
the switch would be to be connected between the HCU and the prop valve, which  
is where I think it is.

This is the low frequency component of the signal, I'll talk about the  
high-frequency component further down.

MC - HCU NODE

Maximum Pressure - ~175 Bar

Achieved by getting maximum vacuum (high revving engine and suddenly close  
throttle) then standing on the pedal as hard as you can. I don't remember  
this number very well it might be as low as ~130 or as high as 220. It also  
depends on your leg strength. This type of pressure is VERY RARE at this  
node. For this car, the driver will typically apply <20 bar and very rarely  
exceed 50 bar.

HCU - PROP VALVE NODE

Standing Still - Same as MC pressure - see above.

ABS Maximum - ~110 Bar

This is achieved by loading to GVW and performing an ABS stop, you may find  
that you are pedal effort limited, not limited by ABS control. It's pretty  
rare to get this high of pressure in this mode.

TCS Maximum - ~180 Bar

This is a good candidate. On this vehicle because the HCU had to pump  
through the prop valve to do the brakes-only traction control, the pressures  
coming out of the HCU got very high. The pressure relief valve on the pump  
VERY OFTEN dictated the peak pressure which could be developed - not the  
control - put another way, because the pressure at the rear brake had to  
restrain the entire powertrain (no engine intervention) and push through  
a prop valve, it was often possible to drive through the TC - the engine  
could overpower the brakes, even though very high pressures were being  
generated at the HCU. The noise during TC activation in these applications  
was very dependent upon the pressure relief valve opening point. So the

pressure relief valve value got changed a few times over the years as performance was sacrificed for NVH. Also the tolerance on the pressure relief valves was fairly large - a total of 40 bar, at that time I believe. The pressure relief valve pressure might be anywhere from 90 to 180 bar depending on part-to-part variation, and the design generation that was agreed upon.

You can achieve this easiest by getting the rear wheels off the ground and putting the car in drive. Get into the throttle hard, but not so hard that you drive out of first gear or faster than ~15 mph. If you maintain this for a while, the thermal model to protect the rear linings will disable the Traction Control. You will then need to wait for them to cool, before the function will be reenabled. You can dramatically accelerate the cooling time by cruising (without braking) at about 40 mph. Typical drivers can regularly get high pressures in this mode.

#### PROP VALVE - REAR BRAKE NODE

ABS Maximum Pressure ~70 Bar

Load to GVW and perform an ABS stop at maximum pedal effort.

TCS Maximum Pressure ~100 Bar

This pressure level is strongly dependent upon the pressure relief valve level - see above.

Standing Still

Same as ABS Maximum Pressure

High Frequency Content

The high frequency content has two parts. If you are not in ABS or Traction Control there is practically no high frequency content - the pressure is modulated at <10 Hz. This is basically limited by Bocater response times and hydraulic damping in the ABS orifices.

High Frequency Content Due To Control

During ABS/TC events the pressure is changed in quick steps. Typically it will increase by ~10 Bar in a few milliseconds, and this type of change occurs about every 100ms. The pressure will decrease by about 20 Bar every 300 ms. There can be quite a bit of variation in these numbers, but those are pretty typical. (Actually the numbers I assigned were for ABS, swap "increase" and "decrease" for TC activation.)

High Frequency Content Due to Shock Waves

This is a secondary effect from the control. Generally it is worst right at the outlet of the HCU. It is damped and dissipated the further you get from the HCU. The shock wave is generated from the cyclical pulsing of the pump as well as the sudden changes in pressure when a solenoid valve is snapped open or shut.

The amplitude of this can be really big - I haven't looked at it in this generation unit for a few years, but I think it's about 50 Bar peak-peak right at the HCU. It will fall off as you move further away from the HCU. The frequency is pretty high and I think some components are above the 1 kHz level, but you can get a very good idea of the disturbances by sampling at ~1kHz.

Regards,

John Joyce

---

MSG:FROM: RNEVI -DRBN005 TO: SREIMERS-DRBN007 02/19/99 08:32:45  
To: SREIMERS-DRBN007  
FROM: Ray Nevi USAET(UTC -05:00)  
Subject: Town Car Oasis message  
Talk to Gary Ballint in FCSD Recall. He's not the doc, but he can tell you who



In previous problem but a loose metal part in the switch cavity is definitely a potential cause of this concern.

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from DB7AWAYR-DRBN007 02/16/99 13:41 \*\*\*

Subject: AWAY Facility/VM messages

This note was generated by the AWAY Facility/VM 5799-FLP (c)IBM Corp.  
DO NOT REPLY TO THIS NOTE

AWAY101 This mail item is being routed to you from SCOLE1 at DRBN005  
on behalf of FPORTER at DRBN007.

To: FPORTER -DRBN007  
cc: TMASTERS-DRBN003 TDONOVAN-DRBN005  
DGOEL -DRBN005

From: Sam L. Cole USAET(UTC -05:00)  
Subject: (U)

I UNDERSTAND THAT THERE WILL BE A FOLLOW UP MEETING WITH JACK PASKUS THIS FRIDAY ON THE TOWN CAR INVESTIGATION. I MET WITH JACK TODAY FOR A 1 ON 1, AND HE REQUESTED SOME SPECIFIC INFO. AT FRIDAYS MEETING, PLEASE BRING A SAMPLE SWITCH TO SHOW JACK.

ALSO, HE IS INTERESTED IN KNOWING OUR PROGRESS AND INVESTIGATING IF THE PREVIOUS PROBLEM WITH THE INTERNAL COMPONENTS BREAKING LOOSE IS A POTENTIAL CAUSE OF THIS CONCERN. PLEASE BE PREPARED TO DISCUSS THIS ON FRIDAY. THANKS.

Thank You,

Sam

Ext. 21959

BLDG. 2, 22J31 - MD# 1220 - SCOLE1@FORD.COM

---

MSG:FROM: WABRAMCZ-DRBN005 TO: SREIMERS-DRBN007 02/18/99 08:00:26

To: RWHEELOC-DRBN005

cc: SREIMERS-DRBN007

FROM: William Abramczyk USAET(UTC -05:00)

Subject: Town Car Oasis message

Please review and respond to Steve, I have no issues with this OASIS message.

William M. Abramczyk

Automotive Safety Office-Mail: 500 Fairlane Plaza South (FPS)

Car Safety Investigations Dearborn, MI

Phone (313) 322-3284 Fax (313) 594-2268

\*\*\* Forwarding note from SREIMERS-DRBN007 02/17/99 17:42 \*\*\*

To: WABRAMCZ-DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Town Car Oasis message

Your approval?

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS reimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from JBRADLEY-DRBN006 02/17/99 10:38 \*\*\*

To: SREIMERS-DRBN007

cc: ABRANDT1-DRBN006

FROM: Joe Bradley USAET(UTC -05:00)

Subject: Town Car Oasis message

Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24B431

---

MSG:FROM: I2060625-EXTERNAL TO: SREIMERS-DRBN007 02/18/99 12:49:21  
To: FPORTER --FORDMAIL Fred Porter ( For NLAPOINT--FORDMAIL Norm LaPointe ( F  
SLAROUCH--FORDMAIL Steve LaRouche ( SREIMERS--FORDMAIL Steve Reimers ( F  
cc: PHB4K5L2-EXTERNAL Beringhouse, Steve OTFW0GYK--EXTERNAL Sharpe, Robert  
From: Rahman, Aziz  
Subject: Switch Log and Eval. Procedure  
cc: "Beringhouse, Steven" <beringhouse@email.mc.ti.com>,

"Dague, Bryan" <bdague@email.mc.ti.com>,  
"Beumann, Russ" <rbeumann@email.mc.ti.com>,  
"McGuirk, Andy" <a-mcguirk@email.mc.ti.com>,  
"Sharpe, Robert" <rsharpe@email.mc.ti.com>

Updated as of 2/18/99. There were some switches from the initial 24 switch survey that were opened up at AVT and the tag and switch parts were not kept together. I have noted this in the log.

Since the tag numbers for every incoming shipment start from 1, I suggest we use VIN numbers to track the database. This will uniquely identify the switch.

I suggest that the switch analysis priority be as follows:

- Switches from underhood fires, which have not been severely damaged
- Switches from Town Cars, starting by highest mileage and descending
- Switches from CV and GM, starting by highest mileage and descending
- Severely damaged switches from underhood fires
- Disassembled switches, with suspect paperwork trail

<<SwitchLog>>  
Evaluation Procedure updated as of 2/18/99. Note identification of harness wires by color.

<<EVALPROC>>

I think we are closing in on finalizing the log format and the evaluation procedures. I believe that these are good enough for us to start using them for data entry.

In order to reduce confusion, I will plan on updating the log once a week. Please delete the earlier versions, so that you have only one latest copy.

Please comment.

Thanks

Aziz

Attachments sent separately:

---

Data Type	File Name
BINARY	SWITCHLOG.XLS_PC
BINARY	EVALPROC.XLS_PC

---

MSG:FROM: SLAROUCH--FORDMAIL TO: SREIMERS-DRBN007 02/19/99 12:27:59  
To: SREIMERS--FORDMAIL Reimers, Steve (S.  
From: LaRouche, Steve (S.)  
Subject: Shipping Address

Steve: You can have the switches sent to the following address:

Ford Motor Co.  
Central Laboratory  
15000 Century Drive  
Commerce Park North

Dearborn, MI 48120  
Attn: S. LaRouche  
Steve LaRouche (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 845-4876 (313) 322-1614 FAX

---

MSG FROM: SREIMERS--DRBN007 TO: JNEME --DRBN005 02/19/99 12:37:55  
To: JNEME --DRBN005 FPORTER --DRBN007 Frederick J. Porte  
RENLISI--DRBN005 SSALTER --DRBN005  
NLAPPOINT--DRBN005 TMASTERS--DRBN005  
JKAPATI--DRBN004 SREIMERS--DRBN007 Steve Reimers  
FKOHL --DRBN007 Fred Kohl TBAZIL --DRBN005  
JMCINERN--DRBN005 DGOEL --DRBN005  
LBROWN --DRBN005 SCOLEI --DRBN005  
HWELFER3--DRBN006 GSTEVENI--DRBN005  
WAHRAMCZ--DRBN005 MREESE --DRBN005  
SLAROUCH--FORDNA1 TSCHRODY--VISTEON  
DBUDZYNS--VISTEON PSTOKES --VISTEON  
I2060625--EXTERNAL OTFWOGYK--EXTERNAL  
FROM: Steve Reimers USAET(UTC -05:00)  
Requester: Steve Reimers  
Date to be scheduled: 02/23/99  
Starting time: 09:00 AM  
Ending time: 11:00 AM  
Location: bldg 5 3A017  
Subject: DOW Rep Meeting  
Purpose: Discuss with DOW the brake pressure switch.  
Attend Only if interested in materials questions?  
\*\*\*\*\*  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: RAROLA --DRBN005 02/19/99 09:36:24  
To: RAROLA --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Press test  
This is the excel file of our test plan.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: I2060625--EXTERNAL 02/19/99 08:13:02  
To: I2060625--EXTERNAL Aziz Rahman, Texas  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: (U)Pressure Test  
fyl.. I gave him a copy of your test plan and asked what pressure range and frequency we should instrument for.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from JOYCE1 --DRBN007 02/18/99 19:40 \*\*\*  
To: SREIMERS--DRBN007  
cc: FPORTER --DRBN007

---

**FROM:** John Joyce                           **USAET(UTC -05:00)**  
**Subject:** (U)Pressure Tests

State

I got your note and will be on vacation tomorrow through Wednesday. Here's the info:

The more I think about this, the more I think TC activation may be the mechanism.

I am not sure of the order of the things connected and that can influence the low frequency amplitude of the signals. But the short answer is to instrument for 0-210 Bar and sample at 1 kHz or more.

Since I'm not sure of where the pressure switch is hydraulically connected I'll give you pressures at nodes and states I do know. The worst case for the switch would be to be connected between the HCU and the prop valve, which is where I think it is.

This is the low frequency component of the signal. I'll talk about the high-frequency component further down.

MC-CHLORIDE

**MC - RCS NODE**

Achieved by getting maximum vacuum (high revving engine and suddenly close throttle) then standing on the pedal as hard as you can. I don't remember this number very well it might be as low as ~130 or as high as 220. It also depends on your leg strength. This type of pressure is **VERY RARE** at this mode. For this car, the driver will typically apply <20 bar and very rarely exceed 50 bar.

#### **HULL - PROPEL VALVE NOSE**

**Standing Still - Same as MC previous - see above**

ABE Montessori - 10 Pgs

This is achieved by loading to GVW and performing an ABS stop, you may find that you are pedal effort limited, not limited by ABS control. It's pretty rare to see this kind of scenario in this mode.

TCG Monitor - 100 Hz

This is a good candidate. On this vehicle because the HCU had to pump through the prop valve to do the brakes-only traction control, the pressures coming out of the HCU got very high. The pressure relief valve on the pump **VERY OFTEN** dictated the peak pressure which could be developed - not the control - put another way, because the pressure at the rear brake had to restrain the entire powertrain (no engine intervention) and push through a prop valve, it was often possible to drive through the TC - the engine could overpower the brakes, even though very high pressures were being generated at the HCU. The noise during TC activation in these applications was very dependent upon the pressure relief valve opening point. So the pressure relief valve value got changed a few times over the years as performance was sacrificed for NVH. Also the tolerance on the pressure relief valves was fairly large - a total of 40 bar, at that time I believe. The pressure relief valve pressure might be anywhere from 90 to 180 bar depending on part-to-part variation and the design generation that was used.

You can achieve this easiest by getting the rear wheels off the ground and putting the car in drive. Got into the throttle hard, but not so hard that you drive out of first gear or faster than ~15 mph. If you maintain this for a while, the thermal model to protect the rear linings will disable the Traction Control. You will then need to wait for them to cool, before the function will be reenabled. You can dramatically accelerate the cooling time by cruising (without braking) at about 40 mph.

**Originator:**  
Brown

Typical drivers can regularly get high pressures in this mode.

**PROP VALVE - REAR BRAKE NODE**

ABS Maximum Pressure ~70 Bar

Load to GVW and perform an ABS stop at maximum pedal effort.

TCS Maximum Pressure ~100 Bar

This pressure level is strongly dependent upon the pressure relief valve level - see above.

Standing Still

Same as ABS Maximum Pressure

**High Frequency Content**

The high frequency content has two parts. If you are not in ABS or Traction Control there is practically no high frequency content - the pressure is modulated at <10 Hz. This is basically limited by Booster response times and hydraulic damping in the ABS orifices.

**High Frequency Content Due To Control**

During ABS/TC events the pressure is changed in quick steps. Typically it will increase by ~10 Bar in a few milliseconds, and this type of change occurs about every 100ms. The pressure will decrease by about 20 Bar every 300 ms. There can be quite a bit of variation in these numbers, but those are pretty typical. (Actually the numbers I assigned were for ABS, swap "increase" and "decrease" for TC activation.)

**High Frequency Content Due to Shock Waves**

This is a secondary effect from the control. Generally it is worst right at the outlet of the HCU. It is damped and dissipated the further you get from the HCU. The shock wave is generated from the cyclical pulsing of the pump as well as the sudden changes in pressure when a solenoid valve is snapped open or shut.

The amplitude of this can be really big - I haven't looked at it in this generation unit for a few years, but I think it's about 50 Bar peak-peak right at the HCU. It will fall off as you move further away from the HCU. The frequency is pretty high and I think some components are above the 1 kHz level, but you can get a very good idea of the disturbances by sampling at ~1kHz.

Regards,

John Joyce

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MSG:FROM: MREES1 -DRBN003 TO: SREIMERS-DRBN007 02/19/99 12:01:58

To: SREIMERS-DRBN007

cc: JNEME -DRBN003 LSMTTE9 -DRBN005

FROM: M. P. REESE USAFT(UTC-05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

IT LOOKS TO ME THAT WHAT JOE EVANS SAID MATCHES WHAT FRANK CONDON REPLIED MATCHES WHAT I FOUND AND REPORTED. DO YOU STILL ASK ME, "CAN YOU VERIFY STANDARD OR NOT?" THE ANSWER IS CLEAR. I WILL GO A BIT FURTHER ON YOUR QUESTION TOMORROW SATURDAY, BUT NOT BECAUSE THE ANSWER IS NOT CLEAR. I DO NOT HAVE ANY BRAKE PRESSURE DATA FROM 1992 OR 1993 (OR 1994) TOWN CAR TESTING. HOWEVER, I INTEND TO CHECK AGAIN TOMORROW SATURDAY. I WILL TRY TO IDENTIFY SUPPLIERS OF BRAKE PARTS FOR THOSE MODEL YEARS, AND ASK THE RIGHT QUESTIONS. (THIS SECTION'S ABS (AND OTHER TASKS) PERSON HAS BEEN REASSIGNED.) IT IS PROBABLE THAT ANY RELEVANT DATA HERE WAS A VICTIM OF REORGANIZATIONS, SO SUPPLIER DATA APPEARS KEY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS--DRBN007 02/19/99 11:41 \*\*\*

To: MREBSE --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

The cd-rom did not go back to 92. Joe Evans in Chassis Brake dept tells me that Traction Assist was an option in 92 and 93. Also that ABS was not standard on Town car. Can you verify standard or not? Also, do you have any brake pressure data from town car 92/93 testing?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MREBSE --DRBN005 02/19/99 09:11 \*\*\*

To: SREIMERS--DRBN007

cc: JNEME --DRBN005 LSMITH9 --DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - 1992/1993/1994 TOWN CAR

FRANK CONDON (A PANTHER BRAKES PREDECESSOR) HAS REPLIED, ABOUT TOWN CAR TRACTION CONTROL.

I HAVE FOUND AND REPORTED A STATEMENT ABOUT TOWN CAR TRACTION CONTROL, IN THE 1993 SERVICE MANUAL.

HAVE YOU FOUND STATEMENTS ABOUT TOWN CAR TRACTION CONTROL, IN 1992 AND 1994 MODEL SERVICE MANUALS (CD ROM, AS WE TALKED RECENTLY)?

TOGETHER THESE ITEMS ANSWER THE QUESTION ABOUT WHETHER TRACTION CONTROL WAS STANDARD OR OPTIONAL FOR 1992, 1993, AND 1994 TOWN CAR.

I WILL TURN NOW TO ANOTHER TASK, REQUESTED IN THE RECENT MEETING.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from FCCONDON --DRBN005 02/19/99 07:29 \*\*\*

To: MREBSE --DRBN005

cc: LSMITH9 --DRBN005  
FROM: Frank Condon USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

Marty:

92/93/94 TCS was an option. Isnt it still that way?

Regards,

Frank Condon

\*\*\* Forwarding note from MREBSE --DRBN005 02/18/99 09:56 \*\*\*

To: FCCONDON --DRBN005 OSTRNGF--DRBN005

cc: LSMITH9 --DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

FRANK AND GEORGE, I SEE YOUR NAMES LISTED IN A 1995 MODEL RESIDENT REVIEW, FOR ACTUATION OR BOOSTERS/MASTER CYLINDERS - PANTHER.

WAS TRACTION CONTROL STANDARD WITH ABS ON 1992, 1993, AND 1994 MODEL TOWN CAR? READY TO RECEIVE THE ANSWER, AND/OR GOOD LEADS AND BACKGROUND.

THANK YOU.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from MREBSE --DRBN005 02/18/99 09:49 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL --DRBN005 LSMITH9 --DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR  
I ATTENDED A MEETING ON 1999 FEB 17, AND WAS ASKED TO FIND OUT WHETHER TRACTION CONTROL WAS STANDARD WITH ABS ON 1992, 1993, AND 1994 MODEL TOWN CAR. PAGE 06-09-1 OF THE 1993 TOWN CAR, CROWN VICTORIA, AND GRAND MARQUIS SERVICE MANUAL (1992 JULY) STATES, "THE TOWN CAR IS EQUIPPED WITH A 4-WHEEL ANTILOCK BRAKE SYSTEM (ABS) WITH TRACTION ASSIST (TA) AS AN OPTION." THIS IS PROBABLY THE ANSWER FOR 1992, 1993, AND 1994 MODEL TOWN CAR. I AM CHECKING FURTHER ABOUT THAT, FOR THESE THREE MODEL YEARS.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

---

MSG FROM: SREIMERS-DRBN007 TO: GSTEVEN1-DRBN005 02/15/99 08:39:40

To: GSTEVEN1-DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: RE: Brake Pressure Switch Sulfur

Another question for DOW.

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 3011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from SLAROUCH--FORDMAIL Reimers, Steve (S.)

To: SREIMERS--FORDMAIL Reimers, Steve (S.)

From: LaRouche, Steve (S.)

Subject: RE: Brake Pressure Switch Sulfur  
Steve: We have found sulfur in all the other switches. We haven't identified a source yet. I hope that Dow or DuPont can give us some ideas.

Steve LaRouche (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 845-4876 (313) 322-1614 FAX

-----Original Message-----

From: Steve Reimers [mailto:sreimers@gw.ford.com]  
Sent: Monday, February 13, 1999 8:15 AM

To: LaRouche, Steve

Subject: Brake Pressure Switch Sulfur

You mentioned sulfur as one of the contaminants found in the Memphis switch.

Did you find sulfur in any others? Have you identified the likely source?  
thanks,

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 3011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG:FROM: LGEE3 -DRBN006 TO: SREIMERS-DRBN007 02/22/99 11:33:14

To: K2UBIETA-DRBN006  
cc: LGEE3 -DRBN005 SREIMERS-DRBN007

\*\*\* Reply to note of 02/22/99 08:23

FROM: Larry Gee USAET(UTC -05:00)

Subject: 92/93 Town Car Options?

For 1992, the coding handbook first states that ABS is optional. This is followed by a statement:

Per marketing decision, ABS anti-lock brakes (less traction control) is standard on all Lincolns except the Limousine Package.

From this one would guess that ABS is standard and Traction Control is optional for 1992.

For 1993, the manual is incomplete. The page containing this information is

missing. By 1994, however, ABS with traction control is listed as optional for all Lincoln Town Cars. ABS without traction control is not listed.

Regards,  
Larry Gee

---

MSG:FROM: I2060625-EXTERNAL TO: SREIMERS-DRBN007 02/22/99 10:35:35  
To: BLAROUCH-FORDMAIL "Steve LaRouche" SREIMERS-FORDMAIL Steve Reimers (F  
cc: NLAPOINT-FORDMAIL Norm LaPointe ( F FPORTER-FORDMAIL Fred Porter ( For  
cc: OTFW0GYK-EXTERNAL Sharpe, Robert

From: Rahmen, Aziz

Subject: TI Durability Samples

cc: "Sharpe, Robert" <rsharpe@ccmail.mc.ti.com>

I have the following disassembled samples with me and I will forward them to  
Steve L. today pm.

200k Cycles 2 samples

400k Cycles 2 samples

600k Cycles 2 samples

728k Cycles 1 sample ( observed leakage )

800k Cycles 2 samples

This will be part of the library to establish lab tests vs field data.

Regards  
Aziz

---

MSG:FROM: MREESB -DRBN005 TO: SREIMERS-DRBN007 02/22/99 12:34:36

To: SREIMERS-DRBN007

cc: JNEME -DRBN005 LSMITH9 -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

STEVE, I HAVE LOCATED MORE CAR SHOP MANUALS AT EVE:

- \* PAGE 06-09-1 OF THE 1992 TOWN CAR, CROWN VICTORIA, AND GRAND MARQUIS SERVICE MANUAL STATES, "THE LINCOLN TOWN CAR IS EQUIPPED WITH A 4-WHEEL ANTI-LOCK BRAKE SYSTEM (ABS) WITH TRACTION ASSIST (TA) AS AN OPTION."
- \* PAGE 06-09-1 OF THE 1994 TOWN CAR, CROWN VICTORIA, AND GRAND MARQUIS SERVICE MANUAL (1993 JULY) STATES, "THE TOWN CAR AND CROWN VICTORIA/GRAND MARQUIS ARE EQUIPPED WITH 4-WHEEL ANTI-LOCK BRAKE SYSTEM (ABS) WITH TRACTION ASSIST (TA) AS AN OPTION."
- \* (I ALSO HAVE PAGES FROM THE 1991 SERVICE MANUAL, IN CASE WE WANT TO KNOW ABOUT THAT LATER. 1991 MODEL TOWN CAR HAD ABS AS AN OPTION, WITH TA OPTION AVAILABLE ON CARS THAT HAD ABS OPTION.)

STEVE, I WILL GO A BIT FURTHER TO VERIFY, BUT I THINK THE ANSWER FOR 1992, 1993, AND 1994 TOWN CAR IS CLEAR; ABS STANDARD, AND TA OPTIONAL ON ABS CARS. ON SATURDAY 1999 FEB 20, I TOOK A LOOK IN BOXES STORED IN BUILDINGS 1 AND 3. I HAVE NOT YET FOUND ANY USEFUL BRAKE PRESSURE DATA FROM 1992, 1993, OR 1994 MODEL TOWN CAR TESTING. I WILL LOOK FURTHER. SOMETIMES, WE INHERIT LITTLE OR NO INFORMATION.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from MREESB -DRBN005 02/19/99 12:01 \*\*\*

To: SREIMERS-DRBN007

cc: JNEME -DRBN005 LSMITH9 -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

IT LOOKS TO ME THAT WHAT JOE EVANS SAID MATCHES WHAT FRANK CONDON REPLIED

MATCHES WHAT I FOUND AND REPORTED. DO YOU STILL ASK ME, "CAN YOU VERIFY STANDARD OR NOT?" THE ANSWER IS CLEAR. I WILL GO A BIT FURTHER ON YOUR QUESTION TOMORROW SATURDAY, BUT NOT BECAUSE THE ANSWER IS NOT CLEAR. I DO NOT HAVE ANY BRAKE PRESSURE DATA FROM 1992 OR 1993 (OR 1994) TOWN CAR TESTING. HOWEVER, I INTEND TO CHECK AGAIN TOMORROW SATURDAY. I WILL TRY TO IDENTIFY SUPPLIERS OF BRAKE PARTS FOR THOSE MODEL YEARS, AND ASK THE RIGHT QUESTIONS. (THIS SECTION'S ABS (AND OTHER TASKS) PERSON HAS BEEN REASSIGNED.) IT IS PROBABLE THAT ANY RELEVANT DATA HERE WAS A VICTIM OF REORGANIZATIONS, SO SUPPLIER DATA APPEARS KEY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS--DRBN007 02/19/99 11:41 \*\*\*

To: MREESB --DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

The cd-rom did not go back to 92. Joe Evans in Chassis Brake dept tells me the Traction Assist was an option in 92 and 93. Also that ABS was not standard on Town car. Can you verify standard or not? Also, do you have any brake pressure data from town car 92/93 testing?

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESB --DRBN005 02/19/99 09:11 \*\*\*

To: SREIMERS--DRBN007

cc: JNEME --DRBN005 LSMITH9 --DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - 1992/1993/1994 TOWN CAR

FRANK CONDON (A PANTHER BRAKES PREDECESSOR) HAS REPLIED, ABOUT TOWN CAR TRACTION CONTROL.

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I WILL TURN NOW TO ANOTHER TASK, REQUESTED IN THE RECENT MEETING.

Regards,

M. P. Rose 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from FCONDON --DRBN005 02/19/99 07:29 \*\*\*

To: MREESB --DRBN005

cc: LSMITH9 --DRBN005

FROM: Frank Condon USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

Marty:

92/93/94 TCS was an option. Isn't it still that way?

Regards,

Frank Condon

\*\*\* Forwarding note from MREESB --DRBN005 02/18/99 09:56 \*\*\*

To: FCONDON --DRBN005 GSTRINGF--DRBN005

cc: LSMITH9 --DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

FRANK AND GEORGE, I SEE YOUR NAMES LISTED IN A 1995 MODEL RESIDENT REVIEW, FOR ACTUATION OR BOOSTERS/MASTER CYLINDERS - PANTHER.  
WAS TRACTION CONTROL STANDARD WITH ABS ON 1992, 1993, AND 1994 MODEL TOWN CAR?  
READY TO RECEIVE THE ANSWER, AND/OR GOOD LEADS AND BACKGROUND.  
THANK YOU.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from MRESE - DRBN005 02/18/99 09:49 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: (U) BRAKE PRESSURE SWITCH - TOWN CAR

I ATTENDED A MEETING ON 1999 FEB 17, AND WAS ASKED TO FIND OUT WHETHER TRACTION CONTROL WAS STANDARD WITH ABS ON 1992, 1993, AND 1994 MODEL TOWN CAR. PAGE 06-09-1 OF THE 1993 TOWN CAR, CROWN VICTORIA, AND GRAND MARQUIS SERVICE MANUAL (1992 JULY) STATES, "THE TOWN CAR IS EQUIPPED WITH A 4-WHEEL ANTILOCK BRAKE SYSTEM (ABS) WITH TRACTION ASSIST (TA) AS AN OPTION." THIS IS PROBABLY THE ANSWER FOR 1992, 1993, AND 1994 MODEL TOWN CAR. I AM CHECKING FURTHER ABOUT THAT, FOR THESE THREE MODEL YEARS.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

---

MSG:FROM: JNEME -DRBN005 TO: SREIMERS--DRBN007 02/09/99 18:36:28

To: SREIMERS--DRBN007  
FROM: Joseph S. Neme USAET(UTC -05:00)  
SUBJECT: Tech Review

TI can not be invited to the meeting... who from vistoon would you like to invite... if it is key engineers then it is ok.

Joseph S. Neme

LVC - Safety

Phone: 39-08133, Fax:62-18147, E-Mail:jneme@ford.com

Location: MD1255/Cube 2M37, Building #2 Textpager:313-795-7003

\*\*\* Forwarding note from SREIMERS--DRBN007 02/09/99 18:15 \*\*\*

To: JNEME -DRBN005

FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Tech Review

Is it appropriate to invite TI and Vistoon to this meeting?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 02/15/99 12:44:11

To: SREIMERS--DRBN007 Steve Reimers IKAFATI -DRBN004  
FROM: Steve Reimers USAET(UTC -05:00)

Requester: Steve Reimers

Date to be scheduled: 02/16/99

Starting time: 02:00 PM

Ending time: 04:00 PM

Location: 3a017, bldg 5

Subject: Dead Switch, Alternative

Purpose: Joe I have scheduled the room from 2 to 4, pick a time when you can meet. The room is also available after 4.

\*\*\*\*\*  
Steve Reimers building 5 3C043  
AVT Chassis E/B System Applications mail drop 5011  
39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-03286 >

---

MSG FROM: DB7AWAYR-DRBN007 TO: SREIMERS-DRBN007 02/20/99 14:00:57

Subject: AWAY Facility/VM messages

This note was generated by the AWAY Facility/VM 5799-FLP (c)IBM Corp.

DO NOT REPLY TO THIS NOTE

AWA110I This mail item is being routed to you from ZDEERING at DRBN005  
on behalf of FPORTER at DRBN007.

To: FCONDON-DRBN005 Frank Condon JPASKUS-DRBN005 Jack Paskus  
CTESKE-DRBN005 Chuck Teke SCOLE1-DRBN005 Sam L. Cole  
RNIVI-DRBN005 Ray Nevi JBRADLEY-DRBN006  
JLOGEL-DRBN005 Jay Logel WABRAMCZ-DRBN005 William Abramczyk  
TBASIL-DRBN005 Thomas Basil FPORTER-DRBN007  
JNEME-DRBN005 Joseph Neme JMCINERN-DRBN005 John McInerny  
ZDEERING-DRBN005 Z. Deering GOSWALT-DRBN005 G. Oswalt  
TMASTERS-DRBN005 Thomas Masters PSMITH4-DRBN005 Peter Smith  
MHARRIGA-DRBN005 M. Harrigan PVEGH-DRBN005 Paul Vogh  
RENLISI-DRBN005 Rob English

cc: MZEVALKI-DRBN005 Mike Zevalkin LLEZOTTE-DRBN005 Linda Lerotte  
MGRAMZA1-DRBN005 Marie Gracza CVOKAL-DRBN005 Connie Vulak  
MRNUCCI-DRBN005 Mike Romucci JDONES10-DRBN005 Joann Jones  
WBOHAN-DRBN005 Bill Bohan

FROM: Z Deering USAET(UTC -05:00)

Requestor: Z. Deering

Date to be scheduled: 03/01/99 - 05/24/99

Starting time: 03:30 PM

Ending time: 04:00 PM

Location: Bldg. #1 ECR 13E112

Subject: 1992-93 Town Car Undoshood Fires (NHTSA Inquiry PB98-055)

Purpose: Status Review

an asexl sonell zdeering

13 meetings will be scheduled. The dates are:

03/01/99 03/08/99 03/15/99 03/22/99 03/29/99 04/05/99  
04/12/99 04/19/99 04/26/99 05/03/99 05/10/99 05/17/99  
05/24/99

\*\*\*\*\*

Regards,  
Zandra Deering

---

MSG:FROM: 12060625-EXTERNAL TO: SREIMERS-DRBN007 02/22/99 16:32:13

To: SREIMERS-FORDMAIL 'Steve Reimers (F'

From: Rahman, Aziz

Subject: RE: TI Durability Samples

They will be identified with a test number+switchnumber. We will log them  
into the overall Switch Log. As with the rest, all the related data will be  
filled in as available.

Regards  
Aziz

---

From: Steve Reimers[SMTP:[sreimers@ford.com](mailto:sreimers@ford.com)]  
Sent: Monday, February 22, 1999 12:28 PM

Originator:  
Bripw

Page 41 of 180

Date Issued:  
Date Revised: 06/01/99

3713 6548

To: arahman@email.mc.ti.com  
Subject: TI Durability Samples  
\*\*\* Reply to note of 02/22/99 10:35  
How will they be identified? tracked?  
Steve Reimers building 5 3C043  
AVT Chassis E/E Systems Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: I2060625-EXTERNAL TO: SREIMERS-DRBN007 02/22/99 15:19:17  
To: SREIMERS-FORDMAIL 'Steve Reimers' ( F SLAROUCH-FORDMAIL 'Steve LaRouche' ( NLAPOINT-FORDMAIL Norm LaPointe ( F FPORTER -FORDMAIL Fred Porter ( For  
From: Rahman, Aziz  
Subject: TI Durability  
Norm,  
I just confirmed. The durability tests were run at 135 C.  
Regards  
Aziz.

---

MSG:FROM: DBAUER3 -DRBN005 TO: SREIMERS-DRBN007 02/25/99 09:39:01  
To: SREIMERS-DRBN007  
FROM: DAVID BAUER USAFT(UTC -05:00)  
Subject: Brake fluid switch ignition  
Thinking about the switch ignition problem, it occurs to me that if the problem is a short between the contact spring and ground, one possible fix would be to coat the cap with an insulating epoxy coating. This should prevent any bridging of corrosion products from spring or rivet that would lead to high current draw and melting of the plastic. Leaking of fluid might still result in a switch failure, but there would not likely be a possibility of fire. Just a thought  
Regards,  
Dave Bauer (dbauer3) x41756  
Regards,  
DAVID BAUER.

---

MSG:FROM: WBOYER1 -VISTEON TO: SREIMERS-DRBN007 02/25/99 15:51:53  
To: SREIMERS-FORDMAIL Reimers, Steve (S.  
cc: PKOHL -FORDMAIL Kohl, Fred (F.H.) TSCHRODY-VISTEON Schrody, Thomas (T  
GDYGERT -VISTEON Dyger, Greg (G.J. DBUDZYNS-VISTEON Budzynski, Dan (D.  
GHUBERTS-VISTEON Huberts, Gurian (G  
From: Boyer, Wes (W.D.)  
Subject: RE: Speed control servo  
Steve,  
Greg Dyger helped me with this. He ran a dynamic transient response analysis on the flyback voltage appearing at the BPS - Diac node (our J1-9 terminal) when the clutch is engaged and switched off by the external BPS. With the flyback clamping resistor in place, the transient is limited to a relatively clean, exponentially decaying impulse peaking at about -50 volts, with or without the 22 nF capacitor in our module, confirming my description of 2/22/1999.  
Without the 82 ohm resistor and diode across the clutch winding, the voltage is an underdamped oscillation that theoretically peaks at +/- 1000 volts and whose envelope decays exponentially. It is very likely that the switch and/or capacitor (rated at 100 volts dc, 200 v pk) would break down at a much lower voltage. The energy stored in the clutch winding could cause the switch to arc. For this to occur the ignition must be ON and speed control



> From: Steve Reimers  
> To: wboyer1@visteon.com  
> Cc: fkohl@gw.ford.com; tschrody@visteon.com  
> Sent: 2/18/99 5:46 PM  
> Subject: RE: Speed control servo  
>  
> Please re-run this model with the following condition: No Fly-back and  
> FET always  
> vs on and use the Brake Pressure switch to create the switching  
> transient.  
> What is the voltage at the brake pressure switch?  
>  
> Steve Reimers building 5 3C043  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
> \*\*\* Forwarding note from WBOYER1 -VISTEON 02/17/99 10:56 \*\*\*  
> To: DPORTER1-VISTEON Porter, David (D.L.SREIMERS~FORDMAIL Reimers,  
> Steve (S.  
> cc: FKohl -FORDMAIL Kohl, Fred (F.H.) TSCHRODY-VISTEON Schrody,  
> Thomas (T  
> DBUDZYNS-VISTEON Budzynski, Dan (D.  
>  
> From: Boyer, Wes (W.D.)  
> Subject: RE: Speed control servo  
>  
> Attached is an analysis of the idealized flyback pulse of the turn-off  
> transient on the clutch winding:  
> <<CI\_82r44.pdf>>  
>  
> Regards,  
> Wes (W. D.) Boyer Phone: (313) 248-9417  
> Visteon Automotive Systems Fax: (313)  
> 322-3529  
> Precision Speed Control - Electronic Design E-mail:  
> WBoyer1@visteon.com  
> (Usually at work, Wednesday + Thursday, only; Personal e-mail:  
> w.d.boyer@iesee.org)  
>  
> > ---Original Message---  
> > From: Porter, David (D.L.)  
> > Sent: Wednesday, February 17, 1999 10:29 AM  
> > To: Steve Reimers  
> > Cc: Fred Kahl (E-mail); Tom Schrody (E-mail); Wes Boyer (E-mail)  
> > Subject: RE: Speed control servo  
> >  
> > Steve, the inductance of the clutch was at one time called out as  
> 53-112.  
> > MH. This is measured at 1 KHz and is parallel.  
> >  
> > Dave Porter dporter1@Visteon.net.com Phone: 313-390-8674  
> > Fax  
> > 313-322-3529  
> >  
> > ---Original Message---

>> From: Steve Reimers [SMTP:sreimers@gw.ford.com]  
>> Sent: Wednesday, February 17, 1999 9:53 AM  
>> To: dporter1@visteon.com; fkohl@gw.ford.com  
>> Subject: FW: Speed control servo

>>  
>> Fred Kohl will bring the parts to Visteon. These were retrieved  
>> from junkyards  
>> as part of a sampling process related to Brake Pressure switch  
>> function. The  
>> Brake Pressure switch ES spec defines 300 milli-Henry as the  
>> minimum  
>> test induc  
>> tance for life testing. Is this a good number? Can you measure  
>> the  
>> inductance  
>> to establish a minimum and maximum?  
>>  
>> Steve Reimers building 5 3C043  
>> AVT Chassis E/E System Applications mail drop 5011  
>> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
>> \*\*\* Forwarding note from DPORTER1-VISTBON 02/17/99 08:18 \*\*\*  
>> To: SREIMERS-FORDMAIL Reimers, Steve (S.  
>> cc: FKCHL -FORDMAIL Fred Kohl (E-mail) WBOYER1 -VISTEON Wes  
>> Boyer (E-mail)  
>>  
>> From: Porter, David (D.L.)  
>> Subject: FW: Speed control servo  
>>  
>> Steve, the clutch resistance should be in the neighborhood of 24  
>> Ohms. If  
>> the clutch winding is intact, and nothing is mechanically  
>> damaged,  
>> etc. I  
>> would assume the parts are functional. There is no specified  
>> inductance on  
>> the clutch, because it varies with gear position ( open or  
>> closed ).  
>> If it  
>> is important to check functionality of these parts, bring them  
>> to  
>> our lab,  
>> and I can bench test them for you. Are these parts off vehicles,  
>> or  
>> just  
>> unused parts that have been lying in a corner for a few years?  
> You  
>> did not  
>> mention motor phase inductance or resistance. Generally, the  
>> motors  
>> are OK  
>> if they rotate freely, and the three phases all have a  
>> resistance of  
>> about  
>> 2.5 Ohms.

>> Dave Porter dporter1@Visteon.com Phone:  
> 313-390-8674  
>> FAX  
>> 313-322-3529  
>>  
>> >----Original Message----  
>> > From: Boyer, Wes (W.D.)  
>> > Sent: Wednesday, February 17, 1999 8:03 AM  
>> > To: Porter, David (D.L.)  
>> > Subject: FW: Speed control servo  
>> >  
>> >  
>> >f.y.i.  
>> > Regards,  
>> > Wes (W. D.) Boyer Phone: (313)  
>> 248-9417  
>> > Visteon Automotive Systems Fax: (313)  
>> 322-3529  
>> > Precision Speed Control - Electronic Design E-mail:  
>> WBoyer1@visteon.com  
>> > (Usually at work, Wednesday + Thursday, only; Personal e-mail):  
>> > w.d.boyer@juno.org)  
>> >  
>> >----Original Message----  
>> > From: Fred Kohl [SMTP:fkohl@gw.ford.com]  
>> > Sent: Tuesday, February 16, 1999 3:48 PM  
>> > To: wboyer1@visteon.com; tschrody@visteon.com  
>> > Subject: RE: Speed control servo  
>> >  
>> >f.y.i  
>> >  
>> > Regards, Fred Kohl, Precision Speed Control (Panther)  
>> > PROPS ID: FKOHL Phone TBD Pager (888) 377-6280  
>> > IBM Mail(USFMCBUZ)  
>> > Mailing Address: ETC C375  
>> > \*\*\* Forwarding note from SRHIMERS--DRBN007 02/16/99 12:38 \*\*\*  
>> > To: FKOHL --DRBN007  
>> >  
>> > FROM: Steve Reimers USAET(UTC)  
> .05:00)  
>> > Subject: RE: Speed control servo  
>> > These are from MV92 and 93. No known failures. Just want to  
> know  
>> > if  
>> > there  
>> > clutch control function has degraded.  
>> >  
>> > Steve Reimers building 5 3C043  
>> > AVT Chassis E/E System Applications mail drop 5011  
>> > 39-03286 SRHIMERS reimers@ford.com fax 39-03286 >  
>> > \*\*\* Forwarding note from FKOHL --FORDMAIL 02/16/99 10:33 \*\*\*  
>> > To: TSCHRODY--VISTEON Schrody, Thomas (T  
>> > cc: DRUDZYNS--VISTEON Budzynski, Dan (D. PKOHL --FORDMAIL

> Kohl,  
>> Fred  
>> > (P.H.)  
>> > SREIMERS—FORDMAIL Reimers, Steve (S.  
>> >  
>> > From: Boyer, Wes (W.D.)  
>> > Subject: RE: Speed control servo  
>> >  
>> > I'll send a copy of the complete clutch-dump analysis when I  
> get  
>> in on  
>> > Wednesday.  
>> >  
>> > What model year clutches are we talking about? And, Why from  
> the  
>> > "junkyard?  
>> >  
>> > Wes  
>> > w.d.boyer@isicn.org  
>> > —Original Message—  
>> > From: Schmudy, Thomas (T.P.)  
>> > To: Boyer, Wes (W.D.)  
>> > Sent: 2/16/99 10:13 AM  
>> > Subject: FW: Speed control servo  
>> >  
>> > Wes,  
>> >  
>> > I don't think you're in today, but if you are... Could you  
> respond  
>> in  
>> > Steve Reimers? I'm busy at NPEF and will return tomorrow.  
>> >  
>> > —Original Message—  
>> > From: Fred Kohl  
>> > To: tachrody@vianet.com  
>> > Cc: dbudzyn@vianet.com; fkohl@gw.ford.com;  
> sreimers@gw.ford.com  
>> > Sent: 2/16/99 7:59 AM  
>> > Subject: Speed control servo  
>> >  
>> > Can you answer Steve questions?  
>> >  
>> > Regards, \_\_ Fred Kohl, Precision Speed Control (Panther)  
>> > PROFS ID: FKOHL Phone TBD Pager (888) 377-6280  
>> > IBM Mail(USFMCBJZ)  
>> > Mailing Address: ETC C375  
>> > \*\*\* Forwarding note from SREIMERS—DRBN007 02/15/99 18:14 \*\*\*  
>> > To: FKOHL —DRBN007  
>> >  
>> > FROM: Steve Reimers USAET(UTC  
> -05:00)  
>> > Subject: Speed control servo  
>> > What is the inductance and resistance of the clutch? What is  
> used

>> to  
>> > clamp the  
>> > flyback voltage? What is the magnitude of the flyback  
> voltage?  
>> > I have collected at least ten speed servos from junk yards.  
> Can  
>> you test  
>> > them f  
>> > or function?  
>>  
>> > Steve Reimers building 5 3C043  
>> > AVT Chassis E/E System Applications mail drop 5011  
>> > 39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
>  
>  
> Attachments sent separately:  
>  
> Data Type File Name  
> \_\_\_\_\_  
> BINARY CL\_82R44.PDF\_PC

---

MSG:FROM: JNEME -DRBN005 TO: SREIMERS-DRBN007 02/25/99 11:35:24  
To: SREIMERS-DRBN007  
PROM: Joseph S. Name USAET(UTC -05:00)  
SUBJECT: OASIS Return Parts Cost  
Just give them your department number... I don't think they need anything else  
Joseph S. Name  
LVC - Safety  
Phone: 39-08133, Fax: 52-18147, E-Mail:jneme@ford.com  
Location: MD1235/Cube 2M37, Building #2 Textipager:313-795-7003  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/24/99 17:21 \*\*\*  
To: JNEME -DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: OASIS Return Parts Cost  
Central Lab will need a billing number if the parts are shipped in to them  
with shipping costs due. Can you provide dept T118 with an account or some  
means to pay for shipping?  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: I2060625-EXTERNAL TO: SREIMERS-DRBN007 03/02/99 16:33:48  
To: FPORTER -FORDMAIL Porter, Fred (F.J. NLAPOINT)-FORDMAIL LaPointe, Norman (SREIMERS-FORDMAIL Reimers, Steve (S. SLAROUCH-FORDMAIL Steve LaRouche (SREIMERS-FORDMAIL Rahman, Aziz  
From: Rahman, Aziz  
Subject: RE: Switches  
cc: "McGuirk, Andy" <a-mcguirk@gmail.mci.ti.com>  
Steve L., what was the condition of the switches as received. Did they have  
connectors attached to them, or were they open to the elements? Were these  
from the "junkyard" group or the earlier group?  
Regards  
Aziz

From: LaRouche, Steve (S.) (SMTP:slarouch@ford.com)

Sent: Tuesday, March 02, 1999 11:56 AM  
To: Porter, Fred (F.J.); LaPointe, Norman (N.R.); Reimert, Steve (S.J.); 'A. Rakeman'; McCurphy, Shawn (S.L.); LaRouche, Steve (S.)  
We have found three switches so far (including the one to be analyzed by the Sci Lab), that will not open electrically when disc is heated to snap under application of air pressure. I sectioned one of these switches and found what appears to be water (it evaporated rather quickly at room temp) and corrosion product. I found that the transfer pin has been stuck in place by the corrosion products. What this means, is that even if the disc snaps, the pin will not pull back, and the contacts will not open. None of these switches showed evidence of diaphragm leakage on the test stand.  
Steve LaRouche (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 843-4876 (313) 322-1614 FAX

---

MSG:FROM: MREESE ~DRBN005 TO: SREIMERS~DRBN007 03/01/99 12:24:34  
To: SREIMERS~DRBN007 FPORTER ~DRBN007  
cc: TBAZIL ~DRBN005 JNEME ~DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location - DESIGN ORDER  
STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE, CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994 TOWN CAR) BY NOON FRIDAY 1999 MAR 05.  
IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.  
ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?  
Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M3!  
\*\*\* Forwarding note from SREIMERS~DRBN007 02/27/99 16:19 \*\*\*  
To: MREESE ~DRBN005  
cc: FPORTER ~DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
Marty, Please call Fred Porter with the update from your meeting. I will be at MPG most of the day.  
Steve Reimers building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESE ~DRBN005 02/27/99 16:13 \*\*\*  
To: SREIMERS~DRBN007  
cc: TBAZIL ~DRBN005 LSMITH9 ~DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM

MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.  
WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.  
ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM.  
I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS--DRBN007 02/25/99 15:39 \*\*\*

To: MREESE --DRBN005  
FROM: Steve Reimers USART(UTC -05:00)

Subject: Brake Dead Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Paskus a sense of where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Paskus is Monday at 3:30.

thanks,

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: SLAROUCH-FORDNA1 03/04/99 11:02:51

To: SLAROUCH-FORDNA1  
cc: NLAPOINT--DRBN005 FPORTER --DRBN007 Porter, P.J.  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Switch Spark Simulation

Steve, Let's put a hold on the test and re-think the test set-up. We may want to use a corroded part for instance. Also, UTA is going to be providing me with some test harness in a week to 10 days. You can use one of this if we proceed. I think the arc cannot be eliminated as a potential ignition source, yet. We should keep in mind that isolating the Hex port from vehicle ground will not stop the occurrence of arcing. The question is what would the arc be igniting?

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from SLAROUCH-FORDNA1 03/04/99 09:59 \*\*\*

To: NLAPOINT--FORDMAIL LaPointe, Norman (FPORTER --FORDMAIL Porter, Fred (F.J.  
SREIMERS--FORDMAIL Reimers, Steve (S.

From: LaRouche, Steve (S.)

Subject: Brake Switch Spark Simulation

Norm, Fred, Steve: There had been some discussion of filming the arc that takes place inside the brake switch when it operates. Ariz brought over some clutches and a transient suppressor for a set up. Two questions: In light of what TI has accomplished in replicating a fire, i.e., showing that an arc is probably not necessary to start a fire, do we want to proceed with producing and documenting the switch arc? If we do want to proceed, is it possible to get an actual wiring harness for this set up? Please let me know. Thanks.

Steve LaRouche (SLAROUCH)  
Metallurgy Section, Central Laboratory, Room N410  
(313) 843-4876 (313) 322-1614 FAX

---

MSG FROM: TBAZIL -DRBN005 TO: SREIMERS-DRBN007 03/05/99 08:12:05  
To: SREIMERS-DRBN007 Reimers, Steve  
cc: BEGEN -DRBN007 MREESE -DRBN005  
BPEASE -DRBN005 LSMITH9 -DRBN003  
NLAPPOINT-DRBN005 FPORTER -DRBN007  
FROM: Tom Basil USAET(UTC -05:00)  
Subject: Brake pressure Switch  
I don't think so without greater risk than existing ideas, but I welcome ideas  
from cca.  
Have a good day!

---

Thomas E. Basil (313) 59-47547 Leg & Lux Car OFD Braks/Veh Supv  
Drop 1229-LVC, Cube 24-H36, fax 62-16675, pager (358) 375-6449  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/04/99 11:15 \*\*\*  
To: TBAZIL -DRBN005 Basil, Tom  
cc: NLAPPOINT-DRBN005 FPORTER -DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake pressure Switch  
Tom, Another potential solution... Isolate the pressure switch hydraulic port f  
rom the vehicle ground. Is there a way to connect the brake pressure switch to  
the prop-valve hydraulic port with a non-conductive tubing or spacer or someth  
ing else???  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS-DRBN007 TO: DGOEL -DRBN005 02/26/99 17:20:17  
To: DGOEL -DRBN005  
cc: FPORTER -DRBN007 Porter, F.J. SREIMERS-DRBN007 Reimers, S. J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Test Net Test Request  
Test Request number MB8317 has been opened using work task YR295. This test is  
for the Brake pressure switch testing on the 1992 Town Car at MPG.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS-DRBN007 TO: BGERAGHT-DRBN005 02/26/99 15:32:42  
To: BGERAGHT-DRBN005  
cc: JNEME -DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: 92 Town Car Purchase  
dept: T402..... must have been a Freudian thing.  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from JNEME -DRBN005 02/26/99 14:25 \*\*\*  
To: SREIMERS-DRBN007  
cc: BGERAGHT-DRBN005 DLARK -DRBN005  
JRIDENOU-DRBN005  
FROM: Joseph S. Neuns USAET(UTC -05:00)  
SUBJECT: 92 Town Car Purchase  
Steve... you forgot the department number to charge the purchase to... also,

---

your note was to go to Brian Geraghty not Alan...

Joseph S. Neme

LVC - Safety

Phone: 39-08133, Fax: 62-16147, E-Mail:jneme@ford.com

Location: MD1255/Cubo 2M37, Building #2 Textpager:313-795-7003

\*\*\* Forwarding note from SREIMERS--DRBN007 02/26/99 13:10 \*\*\*

To: AGERAUGHT--DRBN006 Geraghty, Alan

cc: DLARK --DRBN005 JRIDENOU--DRBN005

JNEME --DRBN005 FPORTER --DRBN007 Porter, F.J.

DGOEL --DRBN005 SREIMERS--DRBN007 Reimers, S. J.

PROM: Steve Reimers USAET(UTC -05:00)

Subject: 92 Town Car Purchase

Program : ABS Pressure Pulses

Veh: 1992 Town Car , 42K miles, Charcoal Gray

VIN: 1LNLM81W3NY669063

Price: \$12K

Location: Hill Park Lincoln Mercury, Ann Arbor Road at I275

Phone: 734-453-2424 X254 , Tim Guida

thanks,

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: I2060625--EXTERNAL 02/26/99 12:46:00

To: I2060625--EXTERNAL Aziz Rahman, Texas

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Pressure Profiles

fyi

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from FPORTER --DRBN007 02/26/99 08:46 \*\*\*

To: SREIMERS--DRBN007

FROM: F. J. Porter USAET(UTC -05:00)

Subject: Brake Pressure Profiles

Please forward to Aziz.

Regards,

Fred Porter OV - fporter fporter@ford.com

Chassis E/E Systems Applications (313)845-3722

Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145

\*\*\* Forwarding note from PBZVAJKN--EXTERNAL 02/25/99 19:08 \*\*\*

To: FPORTER --FORDMAIL

From: PBZVAJKN--EXTERNAL

Subject: Brake Pressure Profiles

From: James\_Heebah@compteches.com

Fred,

I asked our hydraulics test department about the pressure distribution on the life tests I supplied here is what I found out:

The high pressure cycles are about 110bar at the master cylinder and 50 to 60 bar at the wheel ends.

The low pressure cycles are about 55 bar at the master cylinder and 24 to 40 bar at the wheel ends.

Hope this helps.

Jim

MSG FROM: SREIMERS--DRBN007 TO: GSTEVENI--DRBN005 03/08/99 15:08:38

To: GSTEVENI--DRBN005

FPORTER--DRBN007 Porter, F.J.

cc: SLAROUCH--FORDNA1

USAET(UTC -05:00)

FROM: Steve Reimers

Subject: RE: Town Car Testing

Greg, the brake cleaning fluid should be checked for contaminants that may be harmful to the BP switch. At MPG last week I observed the mechanic using it to clean the master cylinder reservoir exterior and the area around the BP switch where the brake fluid had been dripping. Oxyfate source?

Steve Reimers building 3 3B008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS steiners@ford.com fax 39-03286 ;>

\*\*\* Forwarding note from JMORRIS6--FORDNA2 03/08/99 10:35 \*\*\*

To: SREIMERS--FORDMAIL Reimers, Steve (S.

cc: JGWISDAL--FORDNA2 Gwisdalla, Joe (J.

From: Morris, John (J.M.)

Subject: RE: Town Car Testing

I just FTP 27 test files to you and 1 excel sheet describing the test runs.  
MPG will try to perform the low mu testing on Tuesday morning.

The brake parts cleaner # is

F6AZ-2CH10-AB

Ford internal Ref. # is

147124

John Morris

Michigan Proving Ground

Phone: 810-752-8770 Fax: 810-752-8656

jmorris6@ford.com

—Original Message—

From: Steve Reimers [mailto:steiners@gw.ford.com]

Sent: Saturday, March 06, 1999 6:41 PM

To: Gwisdalla, Joe

Cc: jmorris6@mail.ford.com

Subject: Town Car Testing

Joe,

I will need more test runs. The 16 data sets I have so far do not have much ABS event data. The transducer at the HCU must be checked to be absolutely sure it is connected to the Prop-valve that has the Brake pressure switch. I used some data from a low mu surface so that the rear has a long ABS event. If

this means testing on snow then I can do without the fifth wheel channel so you don't have to ruin it. I would like to see two data sets run at 40 mph on

low mu. If the data looks good I will probably need 3 more similar runs. If using a split mu surface helps go ahead, but be sure the low mu is on the brake side that has the brake pressure switch.

Also, I need the Ford Part number for the brake cleaning fluid that Tom H. used

on the car. We need to get this for chemical analysis of contaminants we are seeing in the field.

\*\*\*\*\*

thanks,

Originator:  
Briewer

Page 53 of 150

Date issued:  
Date Revised: 06/01/99

3713 6560

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS steimers@ford.com fax 39-03286 >

MSG:FROM: MREESE -DRBN005 TO: SREIMERS-DRBN007 03/06/99 17:33:13  
To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN003 LSMITH9 -DRBN005  
DSYLVEST-DRBN006  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location, 1992/1993/1994 TOWN CAR  
STEVE, PANTHER SERVICE MANUALS PROVIDE A LITTLE MORE LIGHT:  
\* 1993 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM) AND 1994 MODEL (ON  
PAGE 10-03-1, SPEED CONTROL SYSTEM - ELECTRONIC) MANUALS CONTAIN THIS  
SENTENCE, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE  
NO VACUUM LINES ARE REQUIRED."  
\* I WILL FIND AND CHECK A 1992 MODEL MANUAL.  
THIS SOMEWHAT SUPPORTS A SPACE BEING AVAILABLE ON THE TOWN CAR BRAKE PEDAL  
AND BRACKET ASSEMBLY. I WILL TRY TO BE READY, WHEN SOMEONE COMES TO CHECK.  
Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/05/99 17:24 \*\*\*  
To: JKAPATI -DRBN004  
cc: FPORTER -DRBN007 Porter, F.J. MREESE -DRBN005  
FKOHL -DRBN007  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location  
Joe, Can you do the checking that Marty is requesting? Do you know who the desi  
gn and release engineer(s) is for the brake pedal mounted switch and the harnes  
s?  
Steve Reimers building 5 3E008  
AVT Chassis E/B System Applications mail drop 5011  
39-03286 SREIMERS steimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESE -DRBN005 03/05/99 14:27 \*\*\*  
To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN003 LSMITH9 -DRBN005  
DSYLVEST-DRBN006 WLIVINGS-DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location - DESIGN ORDER RESULTS  
STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994  
TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S  
BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL  
ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY -  
SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C956-)  
ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO  
STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED,  
AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE  
WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.  
IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE  
1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS,  
WERS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE  
NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH  
AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.  
IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO

ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from MRESE -DRBN005 03/01/99 12:24 \*\*\*

To: SREIMERS -DRBN007 FPORTER -DRBN007

cc: TBAZIL -DRBN005 JNEMB -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location - DESIGN ORDER

STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE, CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994 TOWN CAR) BY NOON FRIDAY 1999 MAR 05.

IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.

ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS -DRBN007 02/27/99 16:19 \*\*\*

To: MRESE -DRBN005

cc: FPORTER -DRBN007 Porter, F.J.

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location

Marty, Please call Fred Porter with the update from your meeting. I will be at MPG most of the day.

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MRESE -DRBN005 02/27/99 16:13 \*\*\*

To: SREIMERS -DRBN007

cc: TBAZIL -DRBN005 LSMITH9 -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.

ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM.

I INTEND T CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS -DRBN007 02/25/99 13:39 \*\*\*

To: MRESE -DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Parkus a sense of where we are on this task, what the next step(s) are and when they are targetted to complete. My meeting with Parkus is monday at 3:30.

thanks,  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: JMORRIS6-FORDNA2 TO: SREIMERS--DRBN007 03/08/99 10:35:41  
To: SREIMERS--FORDMAIL, Reimers, Steve (S.  
cc: JGWISDAL--FORDNA2 Gwidaile, Joe (J.  
From: Morris, John (J.M.)  
Subject: RE: Town Car Testing

I just FTP 27 test files to you and 1 excel sheet describing the test runs.  
MPG will try to perform the low mu testing on Tuesday morning.

The brake parts cleaner # is

F6AZ-2C810-AB

Pend internal Ref. # is

147124

John Morris

Michigan Proving Ground

Phone: 810-752-8770 Fax: 810-752-8656

jmorris6@ford.com

-----Original Message-----

From: Steve Reimers (mailto:sreimers@gw.ford.com)

Sent: Saturday, March 06, 1999 6:41 PM

To: Gwidaile, Joe

Cc: jmorris6@mail.ford.com

Subject: Town Car Testing

Joe,

I will need more test runs. The 16 data sets I have so far do not have much ABS event data. The transducer at the HCU must be checked to be absolutely sure it is connected to the Prop-valve that has the Brake pressure switch. I need some data from a low mu surface so that the rear has a long ABS event. If

this means testing on snow then I can do without the fifth wheel channel so you don't have to ruin it. I would like to see two data sets run at 40 mph on

low mu. If the data looks good I will probably need 3 more similar runs. If using a split mu surface helps go ahead, but be sure the low mu is on the brake side that has the brake pressure switch.

\*\*\*\*\*

Also, I need the Ford Part number for the brake cleaning fluid that Tom H. used

on the car. We need to get this for chemical analysis of contaminants we are

seeing in the field.

\*\*\*\*\*

thanks,

Steve Reimers building 5 3B008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 03/08/99 15:38:37  
To: NLAPPOINT--DRBN005 WDXON2--DRBN004  
FPORTER--DRBN007 Frederick J. Poite SREIMERS--DRBN007 Steve Reimers  
DKULKAR2--DRBN005 GMETZ--DRBN007 Gary Metz

FROM: Steve Reimers USAET(UTC -05:00)  
Requester: Steve Reimers  
Date to be scheduled: 03/09/99  
Starting time: 09:00 AM  
Ending time: 10:45 AM  
Location: Bldg 5 3A017  
Subject: Brake Pressure Switch Connector  
Purpose: Discuss a better sealing connector.

\*\*\*\*\*  
Will, Please invite Rick Ratke at UTA to attend.  
\*\*\*\*\*

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS-DRBN007 TO: I2060625-EXTERNAL 02/26/99 12:46:00  
To: I2060625-EXTERNAL Aziz Rahmat, Texas

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Pressure Profiles

fyi

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from FPORTER -DRBN007 02/26/99 08:46 \*\*\*

To: SREIMERS-DRBN007

FROM: F. J. Porter USAET(UTC -05:00)

Subject: Brake Pressure Profiles

Please forward to Aziz.

Regards,

Fred Porter OV - fporter@ford.com  
Chassis E/E Systems Applications (313)845-3722  
Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145

\*\*\* Forwarding note from PBZVAJKN-EXTERNAL 02/25/99 19:08 \*\*\*

To: FPORTER -FORDMAIL

From: PBZVAJKN-EXTERNAL

Subject: Brake Pressure Profiles

From: James\_Heebsh@comdevcs.com

Fred,

I asked our hydraulics test department about the pressure distribution on  
the life test I supplied here is what I found out:

The high pressure cycles are about 110bar at the master cylinder and 50 to  
80 bar at the wheel ends.

The low pressure cycles are about 35 bar at the master cylinder and 24 to  
40 bar at the wheel ends.

Hope this helps.

Jim

---

MSG:FROM: WABRAMCZ-DRBN005 TO: SREIMERS-DRBN007 02/26/99 14:49:05

To: SREIMERS-DRBN007 FPORTER -DRBN007

FROM: William Abramczyk USAET(UTC -05:00)

Subject: PC File(s) sent to you...

Serge & Fred,

I've updated the service parts sales data and plotted it in the attached  
file. It appears that there is an upward trend for service part sales of

the 9F924 switches with possibly a slight underlying seasonal trend.  
file: speales.xls

William M. Abramczyk  
Automotive Safety Office-Mail: 500 Fairlane Plaza South (FPS)  
Car Safety Investigations Dearborn, MI  
Phone (313) 322-3284 Fax (313) 594-2264

---

MSG:FROM: MREESE -DRBN005 TO: SREIMERS-DRBN007 03/09/99 06:46:56  
To: JKAFATI -DRBN004 FKOHL -DRBN007  
cc: TBAZIL -DRBN005 SREIMERS-DRBN007  
JNEME -DRBN005 DSYLVES1-DRBN005  
WLIVINGS-DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location - 1992/1993/1994 TOWN CAR  
JOE AND FRED, I ASK THAT YOU BOTH REVIEW AVAILABLE PACKAGE ON THE BRAKE PEDAL  
AND BRACKET ASSEMBLY (-2450-), TO SEE SPACE AVAILABLE AND TO HELP YOU CHOOSE  
A SPEED CONTROL DEACTIVATE SWITCH THAT WILL FUNCTION IN THAT SPACE ON  
1992/1993/1994 TOWN CAR. THIS IS THE CHECK THAT I HAVE ASKED FOR HELP,  
PLEASE.  
CONTACT DEL SYLVESTER X16540, PLEASE, TO REVIEW THIS SOONEST, PLEASE.  
(I WILL BE ABSENT FOR A FEW DAYS, AND DO NOT WANT THAT TO DELAY THIS REVIEW.)  
THANK YOU...(AND THANKS, DEL).  
Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from MREESE -DRBN005 03/08/99 15:48 \*\*\*  
To: SREIMERS-DRBN007  
cc: TBAZIL --DRBN005 DSYLVES1-DRBN005  
JEVANSH -DRBN005 BPHASE -DRBN005  
AZAPARAC--DRBN005 FPORTER -DRBN007  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location  
STEVE, I HAVE NO PROBLEM WITH JOE, BRUCE, OR AL LOOKING AT THE DESIGNER'S  
TUBE TO SEE THE PACKAGE AVAILABLE AROUND THE 1992/3/4 TOWN CAR BRAKE PEDAL  
AND BRACKET ASSEMBLY (-2450-), BUT THEY ARE NOT THE RELEASE ACTIVITY THAT  
WOULD TRY TO RELEASE AN ELECTRICAL SWITCH INTO THAT ENVIRONMENT. SPEED  
CONTROL IS THAT RELEASE ACTIVITY.  
I WILL BE OUT FOR A FEW DAYS. I WILL ASK A CORE DESIGNER TO COORDINATE WITH  
JOE, BRUCE, AND AL, PACKAGE REVIEW BY SPEED CONTROL DESIGN AND RELEASE?  
NEWS ABOUT 1992 MODEL TOWN CAR. THE 1992 SERVICE MANUAL SHOWS THIS FOR THE  
SPEED CONTROL SYSTEM:  
\* EARLY PRODUCTION VEHICLES USED A VACUUM DUMP VALVE, ON THE BRAKE PEDAL AND  
BRACKET ASSEMBLY. PAGE 10-03B-1.  
\* LATE PRODUCTION VEHICLES, LIKE 1993 AND 1994 MODEL TOWN CAR,  
"THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM  
LINES ARE REQUIRED."  
THIS WAS NOT A JOB #1 CHANGE, THAT HISTORY I DO NOT HAVE.  
THIS IS ANOTHER PLACE WHERE THE SPEED CONTROL RELEASE ENGINEER COULD HELP;  
THAT IS, EXACTLY WHEN EARLY PRODUCTION STOPPED AND LATE PRODUCTION STARTED  
(VIN, DATE, ETC.).  
Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/08/99 15:11 \*\*\*

To: MREESSE -DRBN005  
cc: JEVANSB -DRBN003 REESE -DRBN005  
AZAPARAC -DRBN003 TBAZIL -DRBN005  
FPORTER -DRBN007 Porter, F.J. JKAFATI -DRBN004  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
  
Please contact Joe Evans, Bruce Pense, and A. Zapackas when you are ready for the check. These guys should be able to provide a good sanity check.  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESSE -DRBN005 03/06/99 17:33 \*\*\*  
To: SREIMERS -DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
DSYLVEST -DRBN006  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location, 1992/1993/1994 TOWN CAR  
STEVE, PANTHER SERVICE MANUALS PROVIDE A LITTLE MORE LIGHT:  
\* 1993 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM) AND 1994 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM - ELECTRONIC) MANUALS CONTAIN THIS SENTENCE, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."  
\* I WILL FIND AND CHECK A 1992 MODEL MANUAL.  
THIS SOMEWHAT SUPPORTS A SPACE BEING AVAILABLE ON THE TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY. I WILL TRY TO BE READY, WHEN SOMEONE COMES TO CHECK.  
Regards,  
M. P. Reese 313-317-7142 (313-621-0675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS -DRBN007 03/05/99 17:24 \*\*\*  
To: JKAFATI -DRBN004  
cc: FPORTER -DRBN007 Porter, F.J. MREESSE -DRBN005  
PKOHL -DRBN007  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
Joe, Can you do the checking that Marty is requesting? Do you know who the design and release engineer(s) is for the brake pedal mounted switch and the harness?  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESSE -DRBN005 03/05/99 14:27 \*\*\*  
To: SREIMERS -DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
DSYLVEST -DRBN006 WLIVINGS -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location - DESIGN ORDER RESULTS  
STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994 TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY - SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C966-) ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED, AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE)

WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.  
IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE  
1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS,  
WERS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE  
NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH  
AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.  
IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO  
ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from MRESE -DRBN005 03/01/99 12:24 \*\*\*  
To: SREIMERS-DRBN007 FPORTR -DRBN007  
cc: TBAZIL -DRBN005 JNRME -DRBN005  
FROM: M. P. REESE USART(UTC -05:00)  
Subject: Brake Deac Switch Re-location - DESIGN ORDER

STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE,  
CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994  
TOWN CAR) BY NOON FRIDAY 1999 MAR 05.

IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE  
SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.

ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/27/99 16:19 \*\*\*  
To: MRESE -DRBN005  
cc: FPORTR -DRBN007 Porter, P.J.  
FROM: Steve Reimers USART(UTC -05:00)

Subject: Brake Deac Switch Re-location

Marty, Please call Fred Porter with the update from your meeting. I will be at  
MPG most of the day.

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 3011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 P  
\*\*\* Forwarding note from MRESE -DRBN005 02/27/99 16:13 \*\*\*  
To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
FROM: M. P. REESE USART(UTC -05:00)  
Subject: Brake Deac Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON  
THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL  
KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM  
MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE  
PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE  
MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK.  
THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.  
ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM.  
I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/25/99 15:39 \*\*\*

To: MRESESE --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Disc Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Pasqua a sense of where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Pasqua is monday at 3:30.

thanks,

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: SREIMERS--DRBN007 03/09/99 17:21:56

To: WDEXON2 --DRBN004 DKULKAR2--DRBN005  
NLAPPOINT--DRBN005 SREIMERS--DRBN007 Steve Reimers  
FROM: Steve Reimers USAET(UTC -05:00)

Requester: Steve Reimers

Date to be scheduled: 03/12/99

Starting time: 09:00 AM

Ending time: 10:00 AM

Location: bldg 5 3A017 (tentative)

Subject: Brake Pressure Switch Connector

Purpose: Discuss candidates for improving the connector seal.  
Will Or Norm, please invite Rick Ratios (UTA).

\*\*\*\*\*

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

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MSG:FROM: GSTEVEN1--DRBN005 TO: SREIMERS--DRBN007 03/10/99 09:09:03

To: SBAJZER1--DRBN006 cc: SREIMERS--DRBN007 SLAROUCH--FORDNA1  
KGRIIBBLE--DRBN005

From: Greg Stevens USAET(UTC -05:00)

Subject: Town Car Brake Pressure Switch USAET(UTC -05:00)

Stacy: I don't know if you have heard anything about the problems we are experiencing with this switch (FIRES) but a question has been raised concerning the compatibility of a brake parts cleaner (F6AZ-2C110-AB) with this switch. Do you know if the cleaner contains oxalic acid which could be damaging to our switch ? If not, do you have a couple of quarts of this cleaner available that our central lab and Texas Instruments can analyze ?

Regards,

Greg Stevens

---

MSG FROM: SREIMERS--DRBN007 TO: JKAPATI --DRBN004 03/09/99 16:46:24

To: JKAPATI --DRBN004 cc: FKOHL --DRBN007 MRESESE --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: BP switch relocation

Joe, Ray Alvey says Mark Schultz (MSHUL12) is the guy to work with for switch selection. Please contact him at x76703 cube #1G3008.

thanks,

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: JGWISDAL--FORDNA2 03/06/99 18:41:18  
To: JGWISDAL--FORDNA2 Gwisdala, Joe  
cc: JMORRIS6--FORDNA2  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Town Car Testing

Joe,

I will need more test runs. The 16 data sets I have so far do not have much ABS event data. The transducer at the HCU must be checked to be absolutely sure it is connected to the Prep-valve that has the Brake pressure switch. I need some data from a low mu surface so that the rear has a long ABS event. If this means testing on snow then I can do without the fifth wheel channel so you don't have to ruin it. I would like to see two data sets run at 40 mph on low mu. If the data looks good I will probably need 3 more similar runs. If using a split mu surface helps go ahead, but be sure the low mu is on the brake side that has the brake pressure switch.

\*\*\*\*\*  
Also, I need the Ford Part number for the brake cleaning fluid that Tom H. used on the car. We need to get this for chemical analysis of contaminants we are seeing in the field.

\*\*\*\*\*  
thanks,

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: WDIXON2--DRBN004 03/05/99 11:32:56  
To: WDIXON2--DRBN004  
cc: GMETZ --DRBN007 FPORTER--DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Better Sealed COnnector

Wil, This is just a follow-up to our conversation this morning. I need from you a list of connectors that may potentially provide a better environmental seal than the currently used model. New-design time-lines do not support the potential re-call time-line. Please tell UTA or other suppliers of the need for a very rapid response to this inquiry.

thanks,

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: JNEME --DRBN003 03/05/99 11:25:04  
To: JNEME --DRBN005  
cc: FPORTER--DRBN007 Porter, F.J. NLAPOINT--DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Questionnaire Addition?

I learned this morning that it is common in New Orleans for people to have car ports instead of garages. This may be useful information for understanding the environment the cars are exposed to on a daily basis.

Also, important is the exposure of these cars to underhood cleaning agents and contaminants that may occur due to floods and hurricanes, etc. I request these items be added to the questionnaire.

Steve Reimers building 5 3E008

Originator:  
Bspaw

Page 62 of 160

Date issued:  
Date Revised: 03/01/99

3713 6569

AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: JKAFATI--DRBN004 02/25/99 15:43:16

To: JKAFATI --DRBN004

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Speed Control Dvac switch re-location

Joe, Have your eyes returned to normal focus yet? What is the next step(s) to get the re-wiring design for re-locating the Brake pressure switch to the brake pedal? I have to give a status to Jack Peakus on monday and would like to mention some of the corrective action options and activity.

thanks,

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: WABRAMCZ--DRBN005 02/25/99 14:23:47

To: WABRAMCZ--DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Crown Vic BP switch

From what Aziz and I have been able to find it appears that the switch on crown vic MY97 is not master cylinder mounted. It is mounted on either the proportioning valve assembly or the junction block.

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: I2060625--EXTERNAL 02/25/99 10:22:52

To: I2060625--EXTERNAL Aziz Rahman, Texas

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake fluid switch ignition

Please look into the feasibility of David's suggestion and let me know what you think.

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-03286 >

\*\*\* Forwarding note from DBAUER3--DRBN005 02/25/99 09:39 \*\*\*

To: SREIMERS--DRBN007

FROM: DAVID BAUER USAET(UTC -05:00)

Subject: Brake fluid switch ignition

Thinking about the switch ignition problem, it occurs to me that if the problem is a short between the contact spring and ground, one possible fix would be to coat the cup with an insulating epoxy coating. This should prevent any bridging of corrosion products from spring or rivet that would lead to high current draw and melting of the plastic. Leaking of fluid might still result in a switch failure, but there would not likely be a possibility of fire. Just a thought.

Regards,

Dave Bauer (dbauer3) x41756

Regards,

DAVID BAUER

---

MSG FROM: SREIMERS--DRBN007 TO: AJANOTII--DRBN007 02/24/99 10:43:59

To: AJANOTII--DRBN007

FROM: Steve Reimers USAET(UTC -05:00)

Originator:  
Bricsaw

Page 63 of 150

Date Issued:  
Date Revised: 06/01/99

3713 6670

Subject: Warranty Data  
For Town Car 92 and 93.  
Number of Dead Battery claims involving replacement of Brake Pressure Switch.  
Number of Brake pressure switch replacements.  
Param of condition codes for Brake pressure switch replacements.  
Number of Speed control claims involving replacement of Brake P switch.  
No verbatims needed yet!

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS--DRBN007 TO: TSCHRODY-VISTEON 02/24/99 09:48:28  
To: TSCHRODY-VISTEON  
cc: FKOHL --DRBN007

FROM: Steve Reimers USAET(UTC -05:00)

Subject: RE: Speed Control Output

I agree a stuck on condition would drain the battery. The other thing it does is provide a potential for arcing at the brake pressure switch contacts every time the switch actuates. \*\*\*\*\*  
I am interested in ANY failure mode where the clutch output circuit provides a ground path when it should not. Does your DFMEA address this mode of failure?  
\*\*\*\*\*

One possible cause could be a FET latching fault (something I came across years ago). This fault results in the FET being turned on by some internal parasitic mechanism (usually triggered by an over-voltage).

thanks,

Steve Reimers building 5 3C043  
AVT Chassis E/B System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from TSCHRODY-VISTEON 02/24/99 07:24 \*\*\*

To: SREIMERS--FORDMAIL Reimers, Steve (S.

cc: FKOHL --FORDMAIL Kohl, Fred (F.H.)

From: Schrody, Thomas (T.P.)

Subject: RE: Speed Control Output

I'm not sure I understand your question. A continuously energized clutch circuit is not considered a failure mode. The FET is in the "latched" on state whenever the speed control is engaged. When the brake pressure switch disconnects the power from the clutch, the microprocessor will detect it and turn the FET off. When power is re-applied to the clutch, it would be off.

A shorted clutch driver IS a potential failure mode (however, I did not see this failure mode on the one badly burned unit I examined). If the FET were shorted, the clutch would be on whenever the brake pressure switch was closed. Aside from draining the battery when the ignition is off, this would pose no problem. The amount of current drawn by the circuit would be no greater than when the speed control was engaged.

From a safety standpoint, our system will still disengage because the amplifier will see the BOO switch and cancel. In addition, the removal of power by the brake pressure switch will also cancel the system. In both cases, the servo is spooled to the zero (throttle released) position and the clutch is released.

I'll try to make it to your 2:00 meeting this afternoon. I don't have badge access to Building 5. Do you know who I can contact to gain access?  
Regards,

Thomas Schrod  
Product Design Engineer ETC, C-395  
Precision Speed Control Tel: (313) 323-9695  
Visteon Automotive Systems Fax: (313) 322-3529  
> —Original Message—  
> From: Steve Reimers [SMTP:sreimers@gw.ford.com]  
> Sent: Tuesday, February 23, 1999 5:25 PM  
> To: fkohl@gw.ford.com  
> Co: tschrody@visteon.com  
> Subject: Speed Control Output  
>  
> Does your FMBA include a condition where the clutch is continuously  
> energized b  
> because the FET output driver is latched in the ON-state? Is this a  
> failure mode  
> or for the output FET circuit? When the Brake pressure switch disconnects  
> the p  
> power to the clutch would that cause the FET to unlatch? When the  
> Brake pressure switch re-applies power to the clutch would the FET  
> re-latch or  
> stay OFF?  
>  
> Steve Reimers building 5 3C043  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: FKOHLL -DRBN007 TO: SREIMERS-DRBN007 03/09/99 14:41:38  
To: SREIMERS-DRBN007 MREBSE -DRBN005  
JKAFATI -DRBN004  
cc: FPORTER -DRBN007 TBAZIL -DRBN005  
JEVANS8 -DRBN005 DSYLVES1 -DRBN003  
DBUDZYNS -VISTEON BPEASE -DRBN005  
TSCHRODY -VISTEON PKOHL -DRBN007  
FROM: Fred Kohl USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
Want to clarify who has D&R for electrical deactivation switch, it is AVT.  
The current electrical deact switch is released by AVT, believe Mike Salanta  
is the engineer, MSALANTA 1-313-8454007  
Speed Control Group released a vacuum switch for the old vacuum system. Also,  
this switch was packaged by the Brake Group on the brake pedal support brkt.  
Regards, Fred Kohl, Precision Speed Control (Panther)  
PROPS ID: FKOHLL Phone TBD Pager (888) 377-6280  
IBM Mail(USPMCBJZ)  
Mailing Address: ETC C375  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/08/99 18:06 \*\*\*  
To: FKOHLL -DRBN007 TSCHRODY -VISTEON  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
The D&R is from Visteon. Who do you recommend to do the package review of Mart  
y's switch relocation design?  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREBSE -DRBN005 03/08/99 15:48 \*\*\*

To: SREIMERS -DRBN007  
cc: TBAZIL -DRBN005 DSYLVES1 -DRBN005  
JEVANS8 -DRBN005 SPEASE -DRBN005  
AZAPARAC -DRBN005 FPORTER -DRBN007  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

STEVE, I HAVE NO PROBLEM WITH JOE, BRUCE, OR AL LOOKING AT THE DESIGNER'S TUBE TO SEE THE PACKAGE AVAILABLE AROUND THE 1992/3/4 TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY (-2450-), BUT THEY ARE NOT THE RELEASE ACTIVITY THAT WOULD TRY TO RELEASE AN ELECTRICAL SWITCH INTO THAT ENVIRONMENT. SPEED CONTROL IS THAT RELEASE ACTIVITY.

I WILL BE OUT FOR A FEW DAYS. I WILL ASK A CORE DESIGNER TO COORDINATE WITH JOE, BRUCE, AND AL. PACKAGE REVIEW BY SPEED CONTROL DESIGN AND RELEASE? NEWS ABOUT 1992 MODEL TOWN CAR. THE 1992 SERVICE MANUAL SHOWS THIS FOR THE SPEED CONTROL SYSTEM:

- \* EARLY PRODUCTION VEHICLES USED A VACUUM DUMP VALVE, ON THE BRAKE PEDAL AND BRACKET ASSEMBLY. PAGE 10-03B-1.
- \* LATE PRODUCTION VEHICLES, LIKE 1993 AND 1994 MODEL TOWN CAR, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."

THIS WAS NOT A JOB #1 CHANGE. THAT HISTORY I DO NOT HAVE. THIS IS ANOTHER PLACE WHERE THE SPEED CONTROL RELEASE ENGINEER COULD HELP; THAT IS, EXACTLY WHEN EARLY PRODUCTION STOPPED AND LATE PRODUCTION STARTED (VIN, DATE, ETC.).

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS -DRBN007 03/08/99 15:11 \*\*\*

To: MRESE -DRBN005  
cc: JEVANS8 -DRBN005 SPEASE -DRBN005  
AZAPARAC -DRBN005 TBAZIL -DRBN005  
FPORTER -DRBN007 Porter, F.J. JKAFATI -DRBN004  
FROM: Steve Reimert USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

Please contact Joe Evans, Bruce Spease, and A. Zaparac when you are ready for the check. These guys should be able to provide a good sanity check.

Steve Reimert building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MRESE -DRBN005 03/06/99 17:33 \*\*\*

To: SREIMERS -DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
DSYLVEST -DRBN006  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location, 1992/1993/1994 TOWN CAR

STEVE, PANTHER SERVICE MANUALS PROVIDE A LITTLE MORE LIGHT:

- \* 1993 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM) AND 1994 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM - ELECTRONIC) MANUALS CONTAIN THIS SENTENCE, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."
- \* I WILL FIND AND CHECK A 1992 MODEL MANUAL.

THIS SOMEWHAT SUPPORTS A SPACE BEING AVAILABLE ON THE TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY. I WILL TRY TO BE READY, WHEN SOMEONE COMES TO CHECK.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/05/99 17:24 \*\*\*  
To: JKARATI -DRBN004  
cc: FPORTER -DRBN007 Porter, F.J. MREESH -DRBN005  
PKOHL -DRBN007  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Dvac Switch Re-location

Joe, Can you do the checking that Marty is requesting? Do you know who the design and release engineer(s) is for the brake pedal mounted switch and the harness?

Steve Reimers building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESH -DRBN005 03/05/99 14:27 \*\*\*  
To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
DSYLVEST -DRBN006 WLIVING8 -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dvac Switch Re-location - DESIGN ORDER RESULTS

STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994 TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY - SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C966-) ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED, AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.

IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE 1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS, WERS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.

IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from MREESH -DRBN005 03/01/99 12:24 \*\*\*

To: SREIMERS-DRBN007 FPORTER -DRBN007

cc: TBAZIL -DRBN005 JNEME -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dvac Switch Re-location - DESIGN ORDER

STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE, CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994 TOWN CAR) BY NOON FRIDAY 1999 MAR 03.

IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.

ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/27/99 16:19 \*\*\*

To: MRESE -DRBN005  
cc: FFPORTER -DRBN007 Porter, F.J.  
PROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location  
Marty, Please call Fred Porter with the update from your meeting. I will be at MPG most of the day.

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MRESE --DRBN005 02/27/99 16:13 \*\*\*

To: SREIMERS -DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH. ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM. I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS -DRBN007 02/25/99 15:39 \*\*\*

To: MRESE -DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Paskus a sense of where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Paskus is monday at 3:30.

thanks,

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: CSTEPHAN -DRBN005 TO: SREIMERS -DRBN007 03/10/99 11:42:55  
To: SREIMERS -DRBN007 FFPORTER -DRBN007  
SMCCART3 -DRBN005 Shana McCarthy BSICKAFU -DRBN005 Ed Sickafus  
JDOSDALL -DRBN005 James Dossall MPRRELAI -DRBN005 Mark Freeland  
MSMITH30 -DRBN007 KAJELLO -DRBN005 Kelly Aiello  
CSTEPHAN -DRBN005 Craig Stephan  
FROM: Craig Stephan USAET(UTC -05:00)  
Requester: Craig Stephan  
Date to be scheduled: 03/11/99  
Starting time: 02:00 PM  
Ending time: 04:00 PM  
Location: SRL-1529 (near Ed Sickafus office)  
Subject: STI and brake switch overhauling  
Purpose: Following introductory meeting of 3/10/99, this working

meeting will use SIT to analyse 3 problems:

1. Improve present switch to prevent brake fluid/water ingress.
  2. Find new way to provide redundant speed control deactivation.
  3. Prevent corrosion leakage paths from starting a fire (in either present switch or new design).
- \*\*\*\*\*

---

MSG:FROM: MREESSE -DRBN005 TO: SREIMERS-DRBN007 03/10/99 12:14:47

To: SREIMERS-DRBN007

cc: TBAZIL -DRBN005 JNEME -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: EP switch relocation

STEVE, THANKS. (I AM STILL OUT, BUT I AM STILL WATCHING. BACK FRIDAY.)

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS-DRBN007 03/09/99 16:46 \*\*\*

To: JKAFATI -DRBN004

cc: FKOHIL -DRBN007 MREESSE -DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: EP switch relocation

Joe, Ray ALvey says Mark Schulte (MSHUL12) is the guy to work with for switch s election. Please contact him at #78703 cube #1G008.

thanks,

Steve Reimers building 5 3B008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: SLAROUCH-FORDNA1 TO: SREIMERS-DRBN007 03/12/99 13:03:30

To: NLAPPOINT-FORDMAIL LaPointe, Norman SLAROUCH-FORDNA1 LaRouche, Steve  
FPORTER -FORDMAIL Porter, Fred SREIMERS-FORDMAIL Reimers, Steve

GSTEVEN1-FORDSMTP Stevens, Gregory

From: LaRouche, Steve (S.)

Subject: OASIS

I received another switch from the oasis. 93 Town Car, ~83k miles. Dealer: Robinson Brothers, Baton Rouge, LA. Complaint was that ABS light stays on, brakes grab when vehicle is coasting as though brakes had been applied.

Replaced switch because it was found to be leaking.

Steve LaRouche (SLAROUCH)

Metallurgy Section, Control Laboratory, Room N410

(313) 843-4976 (313) 322-1614 FAX

---

MSG:FROM: BPEASE -DRBN005 TO: SREIMERS-DRBN007 03/15/99 16:34:17

To: KGRIBBLE -DRBN005 GSTEVEN1-DRBN005

cc: SREIMERS-DRBN007 FPORTER -DRBN007

FROM: Bruce Pease (BPEASE) USAET(UTC -05:00)

Subject: Non Conductor

In reviewing the speed control switch issue, it occurs to me that the switch might be isolated (not grounded) to the prop valve if we were to put an insulating spacer between the switch and valve in the form of a double threaded bushing. This bushing would have to have strength similar to steel and yet be a non conductor. I checked Marks Handbook and the resistance

for steel (switch) is 95.8 (cir mil per foot), for aluminum (valve) is 17.01, and for cast iron is 448.588. Can a resistance path of 5x resistance cut the current back to an acceptable heating in dead short situation? The cast iron would be fairly easy to machine into bushings.

My question is: in the exotic world of materials, are there other candidates for bushing material? non-metallic?

Regards, Bruce Pease

R&VT-Adv. Brake Systems, 84-54774, fax 39-04145

---

MSG:FROM: OW0ZLQ9P-EXTERNAL TO: SREIMERS-DREN007 03/16/99 15:28:45

To: SREIMERS-FORDMAIL Reimers, Steve

cc: O2421WP1-EXTERNAL Kitt, Michael

From: Urbina, Scott (SA)

Subject: RE: Ford Brake Fluid Questions

From: "Urbina, Scott (SA)"<surfiba@dow.com>

cc: "Kitt, Michael"<mkitt@dow.com>

Steve, I know that Mike was out today and is on vacation tomorrow. I will follow up with him on your request as well.

A few comments....

1. It was my understanding from our recent meeting that it was unknown as to what brake fluid was in the vehicles in question. From a testing standpoint, is Ford wanting to look at the "world" of brake fluids that are in the market. The reason I ask this is that the brake fluid GM uses for factory fill is different from Chrysler which is different from Ford. In fact, the Japanese all use different fluids and chemistries as well. I had mentioned this to several folks after our meeting was over. There are several producers of brake fluids (some for OEM and others for aftermarket) and these all use different formulation chemistry.

2. Conductivity of brake fluid will be contingent upon a number of factors including the chemistry of the "new" (unused/uncharacterized) fluid, water content, and whether or not any impurities have entered the fluid (i.e.; metals from the brake system, etc.)

3. I'll let Mike address this. I am aware of the paper although I don't have a copy of it. The comments I made in number one are valid for this test as well.

I'm sorry if this seems to be confusing or muddies up anything Ford was looking at. It's important, though, to recognize that due to the various fluids in the market that it's difficult to come up with a test procedure. Once a vehicle leaves the assembly plant the type and "mixture" of brake fluid is up in the air. While brake fluid chemistries are "similar" they are not the same...and I don't just mean for corrosion inhibitors, etc. The actual base chemistry can be very different.

Let me know of any questions you may have and anything I can do to help further. Again, I'll put a call into Mike to help on this request.

Scott A. Urbina

Account Manager

Dow Automotive

Phone: 248-351-5557

Fax: 248-946-1706

surfiba@dow.com

> \_\_\_\_\_

> From: Steve Reimers[SMTP:sreimers@ford.com]

> Sent: Tuesday, March 16, 1999 11:23 AM

> To: Urbina, Scott (SA)  
> Subject: Ford Brake Fluid Questions  
>  
> TO: [surbina@dow.com](mailto:surbina@dow.com)  
>  
> This is text of message I sent to Mike Kit today.  
> Subject: Ford Brake Fluid questions  
> 1. When will Brake Fluid without inhibitors be available?  
> 2. Need to know conductivity of Brake Fluid?  
> 3. SAE 971007 describes a way to lab-age brake fluid. Can DOW help?  
> Ford get some  
> s of this lab-aged Brake Fluid? ( Is this the SAE paper you referred  
> to in our  
> meeting in Dearborn on 2/24/99? )  
> thanks,  
>  
> Steve Reimers building 5 3B008  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-03286 >  
>

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MSG FROM: HETTINGE--DRBN007 TO: SREIMERS--DRBN007 03/17/99 06:41:59  
To: SREIMERS--DRBN007  
\*\*\* Reply to note of 03/16/99 18:51  
FROM: HARVEY ETTINGER USAET(UTC -05:00)  
Subject: Town Car  
Steve,  
You can look under the hood if you want. There is one problem -- It is a '90.  
If still interested, let me know.  
Regards,  
HARVEY ETTINGER  
AVT EDS Core Engineering Supervisor  
32-29759 (HETTINGE)

---

MSG FROM: SREIMERS--DRBN007 TO: WGARDNER--DRBN004 03/19/99 19:07:33  
To: WGARDNER--DRBN004  
cc: JHAYDEN2--DRBN005 FPORTER--DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Relay Requirements  
MUST: Operate unhooded; Operate continuously ( normally energized at all times by HOT ALL TIME circuit); Actuating current less than 12 millamps; Actuating voltage is provided by closure to ground; One circuit normally-closed when energized; switch battery voltage to an inductive load ( 53 - 112 mH) of 500 millamps (typical, 800 mA at -40 degrees). Flyback is clamped at load.\*\*\*\*\*  
WANT: Open circuit when load has exceeded 1 amp to eliminate need for fuse; For d Qualified part; Stand-alone mounting; Available in large quantities ( 500,000 in 30 days).  
Steve Reimers building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS [sreimers@ford.com](mailto:sreimers@ford.com) fax 39-04145 >

---

MSG FROM: SREIMERS--DRBN007 TO: FPORTER--DRBN007 03/16/99 17:27:25  
To: FPORTER--DRBN007 Porter, F.J. GSTEVEN1--DRBN005  
SLAROUCH--FORDNA1

---

FROM: Steve Reimers USAET(UTC -05:00)  
Subject: RE: Ford Brake Fluid Questions  
fyl  
Steve Reimers building 5 3E008  
AVT Chassis E/B System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from OW02LQ9P-EXTERNAL 03/16/99 15:28 \*\*\*  
To: SREIMERS-FORDMAIL, Reimers, Steve  
cc: O2421WP1-EXTERNAL Kitt, Michael  
From: Uribia, Scott (SA)  
Subject: RE: Ford Brake Fluid Questions  
From: "Uribia, Scott (SA)"<uribia@ dow.com>  
cc: "Kitt, Michael"<mkitt@dow.com>

Steve, I know that Mike was out today and is on vacation tomorrow. I will follow up with him on your request as well.

A few comments...

1. It was my understanding from our recent meeting that it was unknown as to what brake fluid was in the vehicles in question. From a testing standpoint, is Ford wanting to look at the "world" of brake fluids that are in the market. The reason I ask this is that the brake fluid GM uses for factory fill is different from Chrysler which is different from Ford. In fact, the Japanese all use different fluids and chemistries as well. I had mentioned this to several folks after our meeting was over. There are several producers of brake fluids (some for OEM and others for aftermarket) and these all use different formulation chemistry.
2. Conductivity of brake fluid will be contingent upon a number of factors including the chemistry of the "neat" (unmixed/unadulterated) fluid, water content, and whether or not any impurities have entered the fluid (i.e.: metals from the brake system, etc.)
3. I'll let Mike address this. I am aware of the paper although I don't have a copy of it. The comments I made in number one are valid for this test as well.

I'm sorry if this seems to be confusing or muddies up anything Ford was looking at. It's important, though, to recognize that due to the various fluids in the market that it's difficult to come up with a test procedure. Once a vehicle leaves the assembly plant the type and "mixture" of brake fluid is up in the air. While brake fluid chemistries are "similar" they are not the same....and I don't just mean for corrosion inhibitors, etc. The actual base chemistry can be very different.

Let me know of any questions you may have and anything I can do to help further. Again, I'll put a call into Mike to help on this request.

Scott A. Uribia  
Account Manager  
Dow Automotive  
Phone: 248-351-5557  
Fax: 248-948-1706  
uribia@ dow.com

> -----  
> From: Steve Reimers(SMTP:sreimers@ford.com)  
> Sent: Tuesday, March 16, 1999 11:23 AM  
> To: Uribia, Scott (SA)  
> Subject: Ford Brake Fluid Questions  
>

> TO: surihua@dow.com  
>  
> This is text of message I sent to Mike Kilt today.  
> Subject: Ford Brake Fluid questions  
> 1. When will Brake Fluid without inhibitors be available?  
> 2. Need to know conductivity of Brake Fluid?  
> 3. SAE 971007 describes a way to lab-age brake fluid. Can DOW help  
> Ford get some  
> e of this lab-aged Brake Fluid? ( Is this the SAE paper you referred  
> to in our  
> meeting in Dearborn on 2/24/99? )  
> thanks,  
>  
> Steve Reimers building 5 3E008  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>  
>

---

MSG FROM: SREIMERS--DRBN007 TO: AAGENT --EXTERNAL 03/16/99 11:22:59  
To: AAGENT --EXTERNAL

FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Ford Brake Fluid Questions  
TO: surihua@dow.com

This is text of message I sent to Mike Kilt today.  
Subject: Ford Brake Fluid questions  
1. When will Brake Fluid without inhibitors be available?  
2. Need to know conductivity of Brake Fluid?  
3. SAE 971007 describes a way to lab-age brake fluid. Can DOW help Ford get some  
e of this lab-aged Brake Fluid? ( Is this the SAE paper you referred to in our  
meeting in Dearborn on 2/24/99? )  
thanks,

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

---

MSG FROM: SREIMERS--DRBN007 TO: BPEASE --DRBN005 03/15/99 17:05:12

To: BPEASE --DRBN005  
cc: FPORTER --DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Non Conductor  
5 x 5 ohms = 25 ohms a very good current limiter.  
However 5 x 0.05 = 0.25 ohms isn't. I suspect we are closer to the 0.25 ohm  
condition but I have not measured it. Can you calculate how much total resistance  
the steel provides?

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

\*\*\* Forwarding note from BPEASE --DRBN005 03/15/99 16:34 \*\*\*  
To: KGRIIBBLE--DRBN003 GSTEVEN1--DRBN005  
cc: SREIMERS--DRBN007 FPORTER --DRBN007  
FROM: Bruce Pease (BPEASE) USAET(UTC -05:00)

Subject: Non Conductor  
In reviewing the speed control switch issue, it occurs to me that the switch  
might be isolated (not grounded) to the prop valve if we were to put an

insulating spacer between the switch and valve in the form of a double threaded bushing. This bushing would have to have strength similar to steel and yet be a non conductor. I checked Marks Handbook and the resistance for steel (switch) is 95.8 (cir mil per foot), for aluminum (valve) is 17.01, and for cast iron is 444-588. Can a resistance path of 5x resistance cut the current back to an acceptable heating in dead short situation? The cast iron would be fairly easy to machine into bushings.

My question is: in the exotic world of materials, are there other candidates for bushing material? non-metallic?

Regards, Bruce Poese

R&VT-Adv. Brake Systems, 84-54774, fax 39-04145

---

MSG FROM: SREIMERS--DRBN007 TO: FPORTER --DRBN007 03/11/99 11:25:10

To: FPORTER --DRBN007 Porter, F.J.

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Dose Switch Re-location

Ray Alvey, LVC Switches / RVI/EESE, has asked his engineer ( supplier?) Mark Sohlitz, to assist with this action. Kafail, Kohl and Poese are aware of this.

Steve Reimers building 5 3B008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS creimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from FPORTER --DRBN007 03/11/99 10:18 \*\*\*

To: SREIMERS--DRBN007

FROM: F. J. Porter USAET(UTC -05:00)

Subject: Brake Dose Switch Re-location

Where do we stand with this?

Regards,

Fred Porter OV - fporter@ford.com

Chassis E/E Systems Applications (313)845-3722

Bldg 5 - Mail Drop 5030 - Cubicle 3B004 fax: 390-4145

\*\*\* Forwarding note from PKOHL --DRBN007 03/09/99 14:41 \*\*\*

To: SREIMERS--DRBN007 MREBSE --DRBN005

JKAFATI--DRBN004

cc: FPORTER --DRBN007 TBAZIL --DRBN005

JEVANS3 --DRBN005 DSYLVES1--DRBN005

DBUDZYNS--VISTEON BPEASE --DRBN005

TSCHIRODY--VISTEON FKOHL --DRBN007

FROM: Fred Kohl USAET(UTC -05:00)

Subject: Brake Dose Switch Re-location

Want to clarify who has D&R for electrical deactivation switch, it is AVT.

The current electrical deact switch is released by AVT, believe Mike Salanta is the engineer; MSALANTA 1-313-8454007

Speed Control Group released a vacuum switch for the old vacuum system. Also, this switch was packaged by the Brake Group on the brake pedal support belt.

Regards, Fred Kohl, Precision Speed Control (Panther)

PROFS ID: FKOHL Phone TBD Pager (888) 377-6280

IBM Mail(USFMCRJZ)

Mailing Address: ETC C375

\*\*\* Forwarding note from SREIMERS--DRBN007 03/08/99 18:06 \*\*\*

To: FKOHL --DRBN007 TSCHIRODY--VISTEON

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Dose Switch Re-location

The D&R is from Visteon. Who do you recommend to do the package review of Mart's switch relocation design?

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESB --DRBN005 03/08/99 15:48 \*\*\*  
To: SREIMERS--DRBN007  
cc: TBAZIL--DRBN005 DSYLVE1--DRBN005  
JEVANSB--DRBN005 BPEASE--DRBN005  
AZAPARAC--DRBN005 FPORTER--DRBN007  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

STEVE, I HAVE NO PROBLEM WITH JOE, BRUCE, OR AL LOOKING AT THE DESIGNER'S TUBE TO SEE THE PACKAGE AVAILABLE AROUND THE 1992/3/4 TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY (-2450-), BUT THEY ARE NOT THE RELEASE ACTIVITY THAT WOULD TRY TO RELEASE AN ELECTRICAL SWITCH INTO THAT ENVIRONMENT. SPEED CONTROL IS THAT RELEASE ACTIVITY.

I WILL BE OUT FOR A FEW DAYS. I WILL ASK A CORE DESIGNER TO COORDINATE WITH JOE, BRUCE, AND AL. PACKAGE REVIEW BY SPEED CONTROL DESIGN AND RELEASE? NEWS ABOUT 1992 MODEL, TOWN CAR. THE 1992 SERVICE MANUAL SHOWS THIS FOR THE SPEED CONTROL SYSTEM:

- \* EARLY PRODUCTION VEHICLES USED A VACUUM DUMP VALVE, ON THE BRAKE PEDAL AND BRACKET ASSEMBLY. PAGE 10-03B-1.
- \* LATE PRODUCTION VEHICLES, LIKE 1993 AND 1994 MODEL TOWN CAR, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."

THIS WAS NOT A JOB #1 CHANGE. THAT HISTORY I DO NOT HAVE. THIS IS ANOTHER PLACE WHERE THE SPEED CONTROL RELEASE ENGINEER COULD HELP; THAT IS, EXACTLY WHEN EARLY PRODUCTION STOPPED AND LATE PRODUCTION STARTED (VIN, DATE, ETC.).

Regards,

M. P. Reese 313-317-7142 (313-621-6673 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS--DRBN007 03/08/99 13:11 \*\*\*

To: MREESB --DRBN005  
cc: JEVANSB--DRBN005 BPEASE--DRBN005  
AZAPARAC--DRBN005 TBAZIL--DRBN005  
FPORTER--DRBN007 Porter, F.J. JKAFATI--DRBN004  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

Please contact Joe Evans, Bruce Pease, and A. Zaprackas when you are ready for the check. These guys should be able to provide a good sanity check.

Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESB --DRBN005 03/06/99 17:33 \*\*\*

To: SREIMERS--DRBN007  
cc: TBAZIL--DRBN005 LSMITH9--DRBN005  
DSYLVST--DRBN006  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location, 1992/1993/1994 TOWN CAR

STEVE, PANTHER SERVICE MANUALS PROVIDE A LITTLE MORE LIGHT:

- \* 1993 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM) AND 1994 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM - ELECTRONIC) MANUALS CONTAIN THIS SENTENCE, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."

\* I WILL FIND AND CHECK A 1992 MODEL MANUAL.  
THIS SOMEWHAT SUPPORTS A SPACE BEING AVAILABLE ON THE TOWN CAR BRAKE PEDAL  
AND BRACKET ASSEMBLY. I WILL TRY TO BE READY, WHEN SOMEONE COMES TO CHECK.  
Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS--DRBN007 03/05/99 17:24 \*\*\*

To: JKAPATI --DRBN004

cc: FPORTER --DRBN007 Porter, F.J. MREESSE --DRBN005

PKOHL --DRBN007

PROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location

Joe, Can you do the checking that Marty is requesting? Do you know who the desi  
gn and release engineer(s) is for the brake pedal mounted switch and the harness  
es?

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS reimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MREESSE --DRBN005 03/05/99 14:27 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL --DRBN005 LSMITH9 --DRBN005

OSYLVESTR--DRBN006 WLIVING8--DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location - DESIGN ORDER RESULTS

STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994  
TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S  
BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL  
ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY -  
SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C966-)  
ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO  
STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED,  
AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE  
WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.

IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE  
1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS,  
WERS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE  
NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH  
AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.

IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO  
ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from MREESSE --DRBN005 03/01/99 12:24 \*\*\*

To: SREIMERS--DRBN007 FPORTER --DRBN007

cc: TBAZIL --DRBN005 JNEME --DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location - DESIGN ORDER

STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE,  
CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994  
TOWN CAR) BY NOON FRIDAY 1999 MAR 05.

IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE  
SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.  
ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS~DRBN007 02/27/99 16:19 \*\*\*

To: MRESESE ~DRBN005

cc: FPORTER ~DRBN007 Porter, P.J.

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

Marty, Please call Fred Porter with the update from your meeting. I will be at MPG most of the day.

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MRESESE ~DRBN005 02/27/99 16:13 \*\*\*

To: SREIMERS~DRBN007

cc: TBAZIL ~DRBN003 LSMITH9 ~DRBN003

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.

ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105, VEHICLE TEST, BRAKE SYSTEM.

I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS~DRBN007 02/25/99 15:39 \*\*\*

To: MRESESE ~DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Paskus a sense of where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Paskus is monday at 3:30.

thanks,

Steve Reimers building 5 3CD43

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS~DRBN007 TO: AJANOTII~DRBN007 03/10/99 13:17:09

To: AJANOTII~DRBN007

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Warranty Data

Did you get a report from AWS?

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from SREIMERS~DRBN007 02/24/99 10:43 \*\*\*

To: AJANOTII~DRBN007

Originator:  
Srpww

Page 77 of 150

Date issued:  
Date Received: 06/01/99

3713 6584

FROM: Steve Reijmers USAET(UTC -05:00)  
Subject: Warranty Data  
For Town Car 92 and 93.  
Number of Dead Battery claims involving replacement of Brake Pressure Switch.  
Number of Brake pressure switch replacements.  
Pareto of condition codes for Brake pressure switch replacements.  
Number of Speed control claims involving replacement of Brake P switch.  
No verbatims needed yet!  
Steve Reijmers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIJMERS reijmers@ford.com fax 39-03286 >

MSG FROM: SREIMERS-DRBN007 TO: FKOHL -DRBN007 03/09/99 09:13:04  
To: FKOHL -DRBN007  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
You should review the choice of switch.  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from FKOHL -DRBN007 03/09/99 08:29 \*\*\*  
To: SREIMERS-DRBN007 DBUDZYNS-VISTEON  
cc: TSCHRODY-VISTEON MREESE -DRBN005  
FKOHL --DRBN007 USAET(UTC -05:00)  
FROM: Fred Kohl DBUDZYNS-VISTEON  
Subject: Brake Deac Switch Re-location  
The Speed Control Group did release the old vacuum dump valve but the packaging of the valve on the brake pedal support was handled by the brake group.  
I am available to review packaging of a electrical switch in this area, but the normal responsibility is with Brake group and AVT.  
Regards, Fred Kohl, Precision Speed Control (Panther)  
PROPS ID: FKOHL Phone TBD Pager (884) 377-6280  
IBM Mail(USFMICBZJ)  
Mailing Address: ETC C375  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/08/99 18:06 \*\*\*  
To: FKOHL -DRBN007 TSCHRODY-VISTEON  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Deac Switch Re-location  
The D&R is from Visteon. Who do you recommend to do the package review of Marty's switch relocation design?  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESE -DRBN005 03/08/99 15:48 \*\*\*  
To: SREIMERS-DRBN007 DSYLVES1-DRBN005  
cc: TRAZIL -DRBN005 BPEASE -DRBN005  
JEVANSE -DRBN005 FPORTER -DRBN007  
AZAPARAC-DRBN005 USART(UTC -05:00)  
FROM: M. P. REESE  
Subject: Brake Deac Switch Re-location  
STEVE, I HAVE NO PROBLEM WITH JOE, BRUCE, OR AL LOOKING AT THE DESIGN. TUBE TO SEE THE PACKAGE AVAILABLE AROUND THE 1992/3/4 TOWN CAR BR AND BRACKET ASSEMBLY (-2450-), BUT THEY ARE NOT THE RELEASE ACTIVTY. WOULD TRY TO RELEASE AN ELECTRICAL SWITCH INTO THAT ENVIRONMENT.

CONTROL IS THAT RELEASE ACTIVITY.

I WILL BE OUT FOR A FEW DAYS. I WILL ASK A CORE DESIGNER TO COORDINATE WITH JOE, BRUCE, AND AL. PACKAGE REVIEW BY SPEED CONTROL DESIGN AND RELEASE? NEWS ABOUT 1992 MODEL TOWN CAR. THE 1992 SERVICE MANUAL SHOWS THIS FOR THE SPEED CONTROL SYSTEM:

- \* EARLY PRODUCTION VEHICLES USED A VACUUM DUMP VALVE, ON THE BRAKE PEDAL AND BRACKET ASSEMBLY. PAGE 10-03B-1.
- \* LATE PRODUCTION VEHICLES, LIKE 1993 AND 1994 MODEL TOWN CAR, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."

THIS WAS NOT A JOB #1 CHANGE. THAT HISTORY I DO NOT HAVE.  
THIS IS ANOTHER PLACE WHERE THE SPEED CONTROL RELEASE ENGINEER COULD HELP;  
THAT IS, EXACTLY WHEN EARLY PRODUCTION STOPPED AND LATE PRODUCTION STARTED  
(VIN, DATE, ETC.).

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS--DRBN007 03/08/99 15:11 \*\*\*

To: MREESE --DRBN005  
cc: JEVANS8 --DRBN005 BPEASE --DRBN005  
AZAPARAC --DRBN005 TBAZIL --DRBN005  
FPORTER --DRBN007 Porter, F.J. JKAFATI --DRBN004  
FROM: Steve Reimer USAET(UTC -05:00)

Subject: Brake Deac Switch Re-location

Please contact Joe Evans, Bruce Pease, and A. Zaparac when you are ready for the check. These guys should be able to provide a good sanity check.

Steve Reimer building 5 2E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03285 SREIMERS sreimers@ford.com fax 39-03285 >  
\*\*\* Forwarding note from MREESE --DRBN005 03/06/99 17:33 \*\*\*

To: SREIMERS --DRBN007  
cc: TBAZIL --DRBN005 LSMITH9 --DRBN005  
DSYLVEST --DRBN006  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deac Switch Re-location, 1992/1993/1994 TOWN CAR

STEVE, PANTHER SERVICE MANUALS PROVIDE A LITTLE MORE LIGHT:

- \* 1993 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM) AND 1994 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM - ELECTRONIC) MANUALS CONTAIN THIS SENTENCE, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."
- \* I WILL FIND AND CHECK A 1992 MODEL MANUAL.

THIS SOMEWHAT SUPPORTS A SPACE BEING AVAILABLE ON THE TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY. I WILL TRY TO BE READY, WHEN SOMEONE COMES TO CHECK.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS --DRBN007 03/04/99 17:24 \*\*\*

To: JKAFATI --DRBN004  
cc: FPORTER --DRBN007 Porter, F.J. MREESE --DRBN005  
FKOHL --DRBN007  
FROM: Steve Reimer USAET(UTC -05:00)

Subject: Brake Deac Switch Re-location

Joe, Can you do the checking that Marty is requesting? Do you know who the design and release engineer(s) is for the brake pedal mounted switch and the harness

s7

Steve Reimers building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESB -DRBN005 03/05/99 14:27 \*\*\*

To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
DSYLVEST-DRBN006 WLIVINGS-DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location - DESIGN ORDER RESULTS

STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994 TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY - SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C966-) ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED, AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.

IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE 1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS, WERS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.

IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from MREESB -DRBN005 03/01/99 12:24 \*\*\*

To: SREIMERS-DRBN007 FFPORTER -DRBN007  
cc: TBAZIL -DRBN005 JNEMIE -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location - DESIGN ORDER

STEVE, THE RESULT OF THIS MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE, CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994 TOWN CAR) BY NOON FRIDAY 1999 MAR 04.

IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.

ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/27/99 16:19 \*\*\*  
To: MREESB -DRBN005  
cc: FFPORTER -DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Dese Switch Re-location

Marty, Please call Fred Porter with the update from your meeting. I will be at MPG most of the day.

Steve Reimers building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESB -DRBN005 02/27/99 16:13 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL --DRBN003

LSMITH9 --DRBN005

FROM: M. P. REESE

USAET(UTC -05:00)

Subject: Brake Desc Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.

ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM. I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS--DRBN007 02/25/99 15:39 \*\*\*

To: MREESE --DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Desc Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Paekus a sense of where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Paekus is monday at 3:30, thanks,

Steve Reimers building 5 3C043

AVT Chassis E/B System Applications mail drop 5011

39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG-FROM: C2421WP1--EXTERNAL TO: SREIMERS--DRBN007 03/24/99 07:56:35

To: SREIMERS--FORDMAIL 'Steve Reimers'

cc: OW0ZLQ9P--EXTERNAL Urbina, Scott (SA)

From: Kitt, Michael (MB)

Subject: RE: Brake Fluid Shipping addresses

From: "Kitt, Michael (MB)"<mkitt@dow.com>

cc: "Urbina, Scott (SA)"<urbina@dow.com>

Steve,

Samples of the components used to make brake fluid were shipped to TI today. The blend should be produced by adding two (2) gallons of material from the container labeled as Dowanol 237 to the entire content of the container labeled Dowanol 236.

Please call me if you have any questions.

Mike Kitt

> \_\_\_\_\_

> From: Steve Reimers[SMTP:reimers@ford.com]

> Sent: Tuesday, March 16, 1999 4:37 PM

> To: mkitt@dow.com

> Subject: Brake Fluid Shipping addresses

>

> TO: mkitt@dow.com

> .

> please ship the 5 gallons of Ford formula brake fluid without

> inhibitors to:

> \*\*\*\*\*  
> \*\*\*\*\*  
> URGENT: Gerry Terino(508-236-3009)  
> Texas Instruments Incorporated  
> 34 Forest Street, MS-12-37  
> Attleboro, Massachusetts 02703  
> \*\*\*\*\*  
> \*\*\*\*\*  
> and 5 gallons to:  
> Ford Motor Co.  
> Central Laboratory  
> 15000 Century Drive  
> Commerce Park North  
> Dearborn, MI 48120  
> Attn: S. LaRouche  
> \*\*\*\*\*  
> \*\*\*\*\*  
> Please reply to this email so I may set-up an ID for you.  
> thanks,  
>  
> Steve Reimers building 5 3E008  
> AVT Chassis E/E System Applications mail drop 5011  
> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
>

---

MSG FROM: SREIMERS--DRBN007 TO: JNEME --DRBN005 03/25/99 11:57:31

To: JNEME --DRBN005  
cc: WABRAMCZ--DRBN005 FPORTER--DRBN007 Porter, F.J.  
GSTEVEN1--DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Baton Rouge Leaker

Randy said he has not seen this on other vehicles. He works at a Lincoln/Mercury dealership and they don't see many other types of vehicles. He also told be that he used something called Contact cleaner by BG to clean out the connector. This is not a Ford product. He says they may also use WD40 or most anything that is handy to remove brake fluid.

Steve Reimers building 5 3E008  
RVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-04145 >  
\*\*\* Forwarding note from JNEME --DRBN005 03/25/99 10:09 \*\*\*

To: SREIMERS--DRBN007  
cc: WABRAMCZ--DRBN005  
FROM: Joseph S. Name USAET(UTC -05:00)  
SUBJECT: Baton Rouge Leaker

Did you ask if he has ever seen anything like this on another vehicle? A Crown Vic perhaps? A windstar? etc...

Joseph S. Name  
LVC - Safety  
Phone: 39-08133, Fax:62-18147, E-Mail:jname@ford.com  
Location: MD1255/Cube 2M37, Building #2 Teltpager:313-795-7003  
\*\*\* Forwarding note from SREIMERS--DRBN007 03/24/99 17:28 \*\*\*  
To: WABRAMCZ--DRBN005  
cc: JNEME --DRBN005 FPORTER--DRBN007 Porter, F.J.  
JKAFATI --DRBN004 TMASTERS--DRBN005

SREIMERS-DRBN007 Reimers, S. J.  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Baton Rouge Leaker

Bill, I called Robinson Brothers L/M in Baton Rouge and spoke with Randy. He replaced the switch and is shipping it per the OASIS instructions. The car is a 92 Town Car, 76277 miles, VIN 1LNLM52W7NY708347. Car had no brake lights, nor speed control. He replaced the 15 amp fuse and test drove the car. Speed control was still inop and returned to the shop. On opening the hood to extract the BP switch he observed white smoke. When it stopped smoking he replaced it and the 15 amp fuse again. Connector did not appear to be damaged. He cleaned fluid from inside and outside the connector. Vehicle has been returned to customer. Randy says he is very familiar with the leaking bp switch and the symptoms it causes. Not sure what more we can get from this car by send EAA info or it.

Steve Reimers building 5 3E008  
RVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@fmd.com fax 39-04145 >

---

MSG:FROM: AWSAGENT-FORDSMTP TO: SREIMERS-DRBN007 02/23/99 12:50:45  
To: SREIMERS-FORDMAIL

From: AWSAGENT-FORDSMTP

Subject: Oasis SSM Notification

"This message is being sent on behalf of sreimers to fporter@ford.com, jmcne@ford.com, mnevi@ford.com, jbradley@ford.com, tmastex@ford.com, meimera@ford.com, fparker@ford.com, alspoint@ford.com, slarouch@ford.com, walramce@ford.com, ltkrown@ford.com, dgroel@ford.com, hwolffor3@ford.com, jljogel@ford.com for purposes of email compatibility. Do not reply directly to this message.

\*\*\* Begin automated email \*\*\*

You are being notified about the following OASIS SSM:

Comments:

(no comment)

Author: sreimers

Title: Town Car 92 & 93 Brake Pressure Switch

Activity Code: 00 Miscellaneous

QSF/Non-QSF Status: non-QSF\_Item\_generated

QSF Tracking Number: 97-0255

Supersede an active SSM: No

SSM to supersede:

Parts required: No

Message Type: Final

Model year(s): 1992, 1993

Vehicle line(s): Town Car

Build Dates: from: 01-Nov-1991 to: 01-Nov-1993-

Engine(s):

Calibration(s):

Transmission(s):

Broadcast Message: Yes

SSM Distribution: NA; United States

OASIS Service Codes: 203000 301000 607600

Repair Verification: none

SSM Number:

Current Text:

For 1992 and 1993 Town Car: When replacing the Speed Control Deactivation

Originator:  
Bripw

Page 83 of 150

Date Issued:  
Date Revised: 06/01/99

3713 6590

switch (-9F924, Brake Pressure Switch on the Brake Proportioning valve) or its electrical harness, tag the removed part and return to Ford Dearborn.

Tag to show VIN, mileage, dealer code, and reason removed. Ship to:  
Ford Motor Co.

Central Laboratory  
15000 Century Drive  
Commerce Park North  
Dearborn, MI 48120

Attn: S. LaRouche

Last act taken (as of 23-Feb-1999, 12:50:39 PM): Submit to OASIS

\*\*\* End automated email \*\*\*

---

MSG:FROM: WABRAMCZ-DRBN005 TO: SREIMERS-DRBN007 02/24/99 07:29:16

To: SREIMERS-DRBN007

\*\*\* Reply to note of 02/23/99 17:26

FROM: William Abramczyk USAET(UTC -05:00)

Subject: Town car Master Cylinder

In the reports, MORS and CQIS, which I reviewed, there were many complaints of left front brakes, or brakes dragging. The master cylinder was usually the item replaced to fix the problem.

William M. Abramczyk

Automotive Safety Office-Mail: 500 Fairlane Plaza South (PPB)

Car Safety Investigations Dearborn, MI

Phone (313) 322-3284 Fax (313) 594-2268

---

MSG:FROM: AWSAGENT-FORDSMTP TO: SREIMERS-DRBN007 02/24/99 10:25:49

To: SREIMERS-FORDMAIL

From: AWSAGENT-FORDSMTP

Subject: OASIS SSM Notification

"This message is being sent on behalf of mvanhall to tschum@ford.com, sreimers@ford.com, kdallap@ford.com for purposes of email compatibility. Do not reply directly to this message.

\*\*\* Begin automated email \*\*\*

You are being notified about the following OASIS SSM:

Comments:

THIS SSM IS NOW ACTIVE.

Author: sreimers

Title: 1992-93 Town Car - Brake Pressure Switch

Activity Code: 00 Miscellaneous

QSF/Non-QSF Status: non-QSF\_Item\_generated

QSF Tracking Number: 97-0255

Supersedes an active SSM: No

SSM to supersede:

Parts required: No

Message Type: Final

Model year(s): 1992, 1993

Vehicle line(s): Town Car

Build Dates: from: 01-Nov-1991 to: 01-Nov-1993-

Engine(s):

Calibration(s):

Transmission(s):

Broadcast Message: Yes

SSM Distribution: NA: United States

OASIS Service Codes: 203000 301000 607600

Originator:  
Bripw

Page 84 of 160

Date Issued:  
Date Revised: 05/01/99

3713 6591

Repair Verification: none

SSM Number: 12492

Current Text:

When replacing a Speed Control Deactivation switch on a 1992-93 Town Car (-9P924- Brake Pressure Switch on the Brake Proportioning valve) or the switch electrical harness, tag the removed part and return to Ford Motor Company for analysis. Please include VIN #, mileage, dealer code, and reason removed on the tag. Ship to:

Ford Motor Company

Central Laboratory

15000 Century Drive

Commerce Park North

Dearborn, MI 48120

Attn: DEPT. T118

Last set taken (as of 24-Feb-1999, 10:18:55 AM): Final/Complete

\*\*\* End automated email \*\*\*

---

MSG:FROM: RARORA --DRBN005 TO: SREIMERS--DRBN007 02/24/99 10:54:10

To: SREIMERS--DRBN007

cc: RARORA --DRBN005

FROM: Roop Aurora USAET(UTC -05:00)

Subject: Chassis Dyno

Steve, the chassis dyno, with chamber can provide ambient temperature of 120deg

F. Bye the way these chassis dyno's are located at MPG.

Regards,

Roop Aurora

GTO Test Program Supervisor-LVC

Phone 32-23157, FAX 84-50589, Prof. rarora

\*\*\* Forwarding note from SREIMERS--DRBN007 02/23/99 17:31 \*\*\*

To: RARORA --DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Chassis Dyno

Does the chassis dyno provide a means to test the car at high ambient temperature? If so we may want to do some of the brake pressure testing on the dyno as well as MPG.

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: TSCHRODY--VISTEON TO: SREIMERS--DRBN007 02/26/99 07:10:19

To: SREIMERS--FORDMAIL Reimers, Steve (S.

cc: WBOYER1 --VISTEON Boyer, Wes (W.D.)

From: Schrödy, Thomas (T.P.)

Subject: RE: Speed control servo

Steve,

I looked back into our files. The problems with R44 were contained to a design that was in production between August 1995 and April 1996. This would only affect the 1996MY.

Regards,

Thomas Schrödy

Product Design Engineer ETC, C-395

Precision Speed Control Tel: (313) 323-9695

Visteon Automotive Systems Fax: (313) 322-3529

> -----Original Message-----

Originator:  
Brikew

Page 85 of 150

Date Issued:  
Date Revised: 09/01/99

3713 6592

> From: Steve Reimers [SMTP:sreimers@gw.ford.com]  
> Sent: Thursday, February 25, 1999 4:15 PM  
> To: wboyer1@visteon.com  
> Co: fkohl@gw.ford.com; tschrody@visteon.com; gdygert@visteon.com;  
> ghuberts@visteon.com; Porter, F.J.  
> Subject: RE: Speed control servo  
>  
> Thanks for the technical info. Did the bad R44 NGSC batch include any MY92  
> or  
> MY 93 Town cars built after 11/1/91? If so, was there any corrective  
> action  
> for the vehicles already delivered? Also, are there other failure modes  
> internal  
> to the NGSC which result in the clutch coil being energized when it  
> should be  
> off?  
>  
> Steve Reimers building 5 3C043  
> AVT Chassis E/B System Applications mail drop 5011  
> 39-03246 SREIMERS sreimers@ford.com fax 39-03286 >  
> \*\*\* Forwarding note from WBOYER1 -VISTEON 02/25/99 15:51 \*\*\*  
> To: SREIMERS-FORDMAIL Reimers, Steve (S).  
> cc: FKOHOL -FORDMAIL Kohl, Fred (F.H.) TSCHRODY-VISTEON Schrody,  
> Thomas (T  
> GDYGERT-VISTEON Dygert, Greg (G.J. DBUDZYNS-VISTEON Budzynski,  
> Dan (D.  
> GHUBERTS-VISTEON Huberts, Garlan (G  
>  
> From: Boyer, Wes (W.D.)  
> Subject: RE: Speed control servo  
>  
> Steve,  
>  
> Greg Dygert helped me with this. He ran a dynamic transient response  
> analysis on the flyback voltage appearing at the BPS - Diode node (our J1-9  
> terminal) when the clutch is engaged and switched off by the external BPS.  
> With the flyback clamping resistor in place, the transient is limited to a  
> relatively clean, exponentially decaying impulse peaking at about -50  
> volts,  
> with or without the 22 nF capacitor in our module, confirming my  
> description  
> of 2/22/1999.  
>  
> Without the 82 ohm resistor and diode across the clutch winding, the  
> voltage  
> is an underdamped oscillation that theoretically peaks at +/- 1000 volts  
> and whose envelope decays exponentially. It is very likely that the  
> switch  
> and/or capacitor (rated at 100 volts dc, 200 v pk) would break down at a  
> much lower voltage. The energy stored in the clutch winding could cause  
> the  
> switch to arc. For this to occur the ignition must be ON and speed  
> control  
> must have been "SET" (or #1 fault = shorted MOSFET driver) AND the flyback



>> FET  
>> is switched. I will look into that on Wednesday.  
>>  
>> Wes  
>> w.d.boyer@isccc.org  
>>  
>> -----Original Message-----  
>> From: Steve Reimers  
>> To: wboyer1@visteon.com  
>> Cc: fkohl@gw.ford.com; tschrody@visteon.com  
>> Sent: 2/18/99 5:46 PM  
>> Subject: RE: Speed control servo  
>>  
>> Please re-run this model with the following condition: No Fly-back and  
>> FET slow  
>> yes on and use the Brake Pressure switch to create the switching  
>> transient.  
>> What is the voltage at the brake pressure switch?  
>>  
>> Steve Reimers building 5 3C043  
>> AVT Chassis E/E System Applications mail drop 5011  
>> 39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>  
>> \*\*\* Forwarding note from WBOYER1 -VISTEON 02/17/99 10:56 \*\*\*  
>> To: DPORTER1-VISTEON Porter, David (D.L.SREIMERS-FORDMAIL Reimers,  
>> Steve (S.  
>> cc: FKohl -FORDMAIL Kohl, Fred (F.H.) TSCHRODY-VISTEON Schrody,  
>> Thomas (T  
>> DBUDZYNS-VISTEON Budzynski, Dan (D.  
>>  
>> From: Boyer, Wes (W.D.)  
>> Subject: RE: Speed control servo  
>>  
>> Attached is an analysis of the idealized flyback pulse of the turn-off  
>> transient on the clutch winding.  
>> <<CL\_82r44.pdf>>  
>>  
>> Regards,  
>> Wes (W. D.) Boyer Phone: (313) 248-9417  
>> Visteon Automotive Systems Fax: (313)  
>> 322-3529  
>> Precision Speed Control - Electronic Design E-mail:  
>> WBoyer1@visteon.com  
>> (Usually at work, Wednesday + Thursday, only; Personal e-mail:  
>> w.d.boyer@isccc.org)  
>>  
>> -----Original Message-----  
>>> From: Porter, David (D.L.)  
>>> Sent: Wednesday, February 17, 1999 10:29 AM  
>>> To: Steve Reimers  
>>> Cc: Fred Kohl (E-mail); Tom Schrody (E-mail); Wes Boyer (E-mail)  
>>> Subject: RE: Speed control servo  
>>>  
>>> Slave, the inductance of the clutch was at one time called out as  
>> 53-112

>>> MH. This is measured at 1 KHz and is parallel.  
>>>  
>>> Dave Porter dporter1@Visteon.com Phone: 313-390-8674  
>>Fax  
>>> 313-322-3529  
>>>  
>>> -----Original Message-----  
>>> From: Steve Reimers [SMTP:sreimers@gw.ford.com]  
>>> Sent: Wednesday, February 17, 1999 9:53 AM  
>>> To: dporter1@vistecn.com; fkohl@gw.ford.com  
>>> Subject: FW: Speed control servo  
>>>  
>>> Fred Kohl will bring the parts to Visteon. These were retrieved  
>>> from junkyards  
>>> as part of a sampling process related to Brake Pressure switch  
>>> function. The  
>>> Brake Pressure switch ES spec defines 300 milli-Henry as the  
>>> minimum  
>>> test induc  
>>> tance for life testing. Is this a good number? Can you measure  
>> the  
>>> inductance  
>>> to establish a minimum and maximum?  
>>>  
>>> Steve Reimers building 5 3C043  
>>> AVT Chassis E/E System Applications mail drop 5011  
>>> 39-03286 SREIMERS sreimers@fdcd.com fax 39-03286 ;>  
>>> \*\*\* Forwarding note from DPORTER1-VISTEON 02/17/99 08:18 \*\*\*  
>>> To: SREIMERS-FORDMAIL Reimers, Steve (S.  
>>> cc: FKOHL --FORDMAIL Fred Kohl (E-mail) WBOYER1 -VISTEON Wea  
>>> Boyer (E-mail)  
>>>  
>>> From: Porter, David (D.L.)  
>>> Subject: FW: Speed control servo  
>>>  
>>> Steve, the clutch resistance should be in the neighborhood of 24  
>>> Ohms. If  
>>> the clutch winding is intact, and nothing is mechanically  
>> damaged,  
>>> etc. I  
>>> would assume the parts are functional. There is no specified  
>>> inductance on  
>>> the clutch, because it varies with gear position ( open or  
>> closed ).  
>>> If it  
>>> is important to check functionality of these parts, bring them  
>> to  
>>> our lab,  
>>> and I can bench test them for you. Are these parts off vehicles,  
>> or  
>>> just  
>>> unused parts that have been lying in a corner for a few years?  
>> You  
>>> did not

>>> mention motor phase inductance or resistance. Generally, the  
>> motors  
>>> are OK  
>>> if they rotate freely, and the three phases all have a  
>> resistance of  
>>> about  
>>> 2.3 Ohms.  
>>>  
>>> Dave Porter dporter1@Visteon.com Phone:  
>> 313-390-8674  
>>> Fax  
>>> 313-322-3529  
>>>  
>>> > -----Original Message-----  
>>> > From: Boyer, Wes (W.D.)  
>>> > Sent: Wednesday, February 17, 1999 8:05 AM  
>>> > To: Porter, David (D.L.)  
>>> > Subject: FW: Speed control servo  
>>> >  
>>> >  
>>> > f.y.i.  
>>> > Regards,  
>>> > Wes (W. D.) Boyer Phone: (313)  
>>> 248-9417  
>>> > Visteon Automotive Systems Fax: (313)  
>>> 322-3529  
>>> > Precision Speed Control - Electronic Design E-mail:  
>>> WBoyer1@visteon.com  
>>> > (Usually at work, Wednesday + Thursday, only; Personal e-mail:  
>>> > w.d.boyer@icba.org)  
>>> >  
>>> > -----Original Message-----  
>>> > From: Fred Kohl [SMTP:fkohl@gw.ford.com]  
>>> > Sent: Tuesday, February 16, 1999 3:48 PM  
>>> > To: wboyer1@visteon.com; tschirky@visteon.com  
>>> > Subject: RE: Speed control servo  
>>> >  
>>> > fyi  
>>> >  
>>> > Regards, Fred Kohl, Precision Speed Control (Panther)  
>>> > PROPS ID: FKOHL Phone TBD Pager (888) 377-6280  
>>> > IBM Mail(USFMCBJZ)  
>>> > Mailing Address: ETC C375  
>>> > \*\*\* Forwarding note from SREIMERS--DRBN007 02/16/99 12:38 \*\*\*  
>>> > To: FKOHL -DRBN007  
>>> >  
>>> > FROM: Steve Reimers USAET(UTC  
>>> -05:00)  
>>> > Subject: RE: Speed control servo  
>>> > These are from MY92 and 93. No known failures. Just want to  
>>> know  
>>> If  
>>> > there  
>>> > clutch control function has degraded.

>>> >  
>>> > Steve Reimers building 5 3C043  
>>> > AVT Chassis E/E System Applications mail drop 5011  
>>> > 39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
>>> > \*\*\* Forwarding note from FKOHL --FORDMAIL 02/16/99 10:33 \*\*\*  
>>> > To: TSCHRODY--VISTEON Schrody, Thomas (T  
>>> > cc: DBUDZYNS--VISTEON Budzynski, Dan (D. FKOHL --FORDMAIL  
>> Kohl,  
>>> > Fred  
>>> > (F.H.)  
>>> > SREIMERS--FORDMAIL Reimers, Steve (S.  
>>> >  
>>> > From: Boyer, Wes (W.D.)  
>>> > Subject: RE: Speed control servo  
>>> >  
>>> > I'll send a copy of the complete clutch-dump analysis when I  
>> get  
>>> > in on  
>>> > Wednesday.  
>>> >  
>>> > What model year clutches are we talking about? And, Why from  
>> the  
>>> > "junkyard?"  
>>> >  
>>> > Wes  
>>> > w.d.boyer@leesa.org  
>>> > —Original Message—  
>>> > From: Schrody, Thomas (T.P.)  
>>> > To: Boyer, Wes (W.D.)  
>>> > Sent: 2/16/99 10:13 AM  
>>> > Subject: FW: Speed control servo  
>>> >  
>>> > Wes,  
>>> >  
>>> > I don't think you're in today, but if you are... Could you  
>> respond  
>>> > to  
>>> > Steve Reimers? I'm busy at NPEF and will return tomorrow.  
>>> >  
>>> > —Original Message—  
>>> > From: Fred Kohl  
>>> > To: tschrody@visteon.com  
>>> > Cc: dbudzyns@visteon.com; fkohl@gw.ford.com;  
>>> > areimers@gw.ford.com  
>>> > Sent: 2/16/99 7:59 AM  
>>> > Subject: Speed control servo  
>>> >  
>>> > Can you answer Steve questions?  
>>> >  
>>> > Regards,\_\_\_ Fred Kohl, Precision Speed Control (Paciner)  
>>> > PROFS ID: FKOHL Phone TBD Pager (888) 377-6280  
>>> > IBM Mail(USPMCHJZ)  
>>> > Mailing Address: ETC C375  
>>> > \*\*\* Forwarding note from SREIMERS--DRBN007 02/15/99 18:14 \*\*\*

>>> > To: PKOHL -DRBN007  
>>> >  
>>> > FROM: Steve Reimers USAET(UTC)  
>>> -05:00)  
>>> > Subject: Speed control servo  
>>> > What is the inductance and resistance of the clutch? What is  
>> used.  
>>> to  
>>> > clamp the  
>>> > flyback voltage? What is the magnitude of the flyback  
>> voltage?  
>>> > I have collected at least ten speed servos from junk yards.  
>> Can  
>>> you test  
>>> > them f  
>>> > or function?  
>>> >  
>>> > Steve Reimers building 5 3C043  
>>> > AVT Chassis E/E System Applications mail drop 5011  
>>> > 39-03286 SREIMERS sreimers@ford.com fax 39-03286 >  
>>  
>>  
>> Attachments sent separately.  
>>  
>> Data Type File Name  
>> -----  
>> BINARY CL\_82R44.PDF PC

---

MSG FROM: FPORTER -DRBN007 TO: SREIMERS -DRBN007 02/26/99 08:46:10

To: SREIMERS -DRBN007  
FROM: F. J. Porter USAET(UTC -05:00)

Subject: Brake Pressure Profiles  
Please forward to Axiz.

Regards,

Fred Porter OV - fporter fporter@ford.com  
Chassis E/E Systems Applications (313)845-3722  
Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145

\*\*\* Forwarding note from PBZVAJKN-EXTERNAL 02/25/99 19:08 \*\*\*

To: FPORTER -FORDMAIL  
From: PBZVAJKN-EXTERNAL  
Subject: Brake Pressure Profiles  
From: James\_Hecbush@compuve.com

Fred,

I asked our hydraulics test department about the pressure distribution on  
the life tests I supplied here is what I found out:

The high pressure cycles are about 110bar at the master cylinder and 50 to  
80 bar at the wheel ends.

The low pressure cycles are about 55 bar at the master cylinder and 24 to  
40 bar at the wheel ends.

Hope this helps.

Jim

MSG:FROM: MREESSE -DRBN005 TO: SREIMERS -DRBN007 02/26/99 10:40:02  
To: DCLARK12 -DRBN005

Originator:  
Bpkew

Page 82 of 150

Date Issued:  
Date Revised: 08/01/99

3713 6599

cc: TBAZIL -DRBN005                    LLEAHY -DRBN005  
SREIMERS-DRBN007  
FROM: M. P. REESE                        USAET(UTC -05:00)  
Subject: 1992-4 Brake Pedal, PANTHER CARLINES  
DENNIS, 9:00 AM MONDAY WILL BE FINE. SAY WHERE, I WILL BE THERE. MAYBE ONE OR TWO OTHERS WILL COME WITH ME. BRAKE PEDAL PACKAGE WILL BE IMPORTANT, SO I AM GLAD IT HAS BEEN LOCATED. ARE COMPLETE BRAKE SYSTEM LAYOUTS ALSO AVAILABLE (OR ARE THEY ARCHIVED)?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from DCLARK12-DRBN005 02/26/99 06:41 \*\*\*  
To: MREESE -DRBN005  
cc: LLEAHY -DRBN005                    DSYLVES1-DRBN005  
DCLARK12-DRBN005  
FROM: Dennis Clark                        USAET(UTC -05:00)

Subject: 1992-4 Brake Pedal

Del Sylvestre has located layout for 1992-4 brake pedal. I would like to set up a meeting for Monday (Marty is at off-site today) to discuss EDO. I would also like to have a designer designated to do study.

Would 9:00 AM Monday 01 March, 1999 at my cube (22M29) be acceptable?

Regards,

Dennis Clark

---

MSG FROM: SREIMERS-DRBN007 TO: SREIMERS-DRBN007 02/26/99 13:10:37

To: AGERAGHT-DRBN006 Genaghty, Alan  
cc: DLARK -DRBN005                    JRIDENOU-DRBN005  
JNEME -DRBN005                        FPORTER -DRBN007 Porter, P.J.  
DOOEL -DRBN005                        SREIMERS-DRBN007 Reimers, S. J.  
FROM: Steve Reimers                    USAET(UTC -05:00)

Subject: 92 Town Car Purchase

Program : ABS Pressure Pulses

Vehc: 1992 Town Car , 42K miles, Charcoal Gray

VIN: 1LNLM81W3NY669063

Price: \$12K

Location: Hino Park Lincoln Mercury, Ann Arbor Road at I275

Phone: 734-453-2424 X254 , Tim Gakla

thanks,

Steve Reimers                        building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG FROM: SREIMERS-DRBN007 TO: SREIMERS-DRBN007 02/26/99 17:20:17

To: DOOEL -DRBN005  
cc: FPORTER -DRBN007 Porter, P.J.            SREIMERS-DRBN007 Reimers, S. J.  
FROM: Steve Reimers                    USAET(UTC -05:00)

Subject: Test Net Test Request

Test Request number MB8317 has been opened using work task YR293. This test is for the Brake pressure switch testing on the 1992 Town Car at MPG.

Steve Reimers                        building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

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MSG;FROM: MREESE -DRBN005 TO: SREIMERS-DRBN007 02/27/99 15:51:15

To: SREIMERS--DRBN007  
cc: TBAZIL -DRBN005  
JNEME -DRBN005  
FROM: M. P. REESE

LSMITH9 -DRBN005  
USAET(UTC -05:00)

Subject: Town Car Master Cylinder

STEVE, I AGREE THAT THE BOOSTER AND MASTER CYLINDER (-2B195-) SHOULD BE ORIGINAL EQUIPMENT ON THE 1992/1993/1994 TEST VEHICLE(S). I DO NOT KNOW WHY THIS HAS BEEN NAMED AS A CRITERIA, BUT I WOULD CHOOSE TO DO IT THAT WAY TO BEST REPRESENT THE VEHICLE AND CONDITION TO BE STUDIED.

HOW ONE CAN TELL: ORIGINAL EQUIPMENT BOOSTER AND MASTER CYLINDER ASSEMBLIES (-2B195-) HAVE EXTERNAL IDENTIFICATION.

EXAMPLE: F2AC-2B195-BA, A BOOSTER AND MASTER CYLINDER ASSEMBLY, IS ALLIED SIGNAL PART NUMBER 2519511. THE BOOSTER HAD TWO THERMAL TRANSFER PRINTS:

\* ON THE FRONT OF THE BOOSTER SHOWING BENDIX/ALLIED SIGNAL LOGO, DATE CODE FOLLOWED BY THE LAST FIVE DIGITS OF BENDIX PART NUMBER, BAR CODE, SERIAL NUMBER, AND FORD PART NUMBER.

\* ON THE TOP OF THE BOOSTER, SHOWING "POL."

ADDITIONALLY, THE FRONT END AND/OR BOTTOM OF THE MASTER CYLINDER SHOULD YIELD MORE IDENTIFICATION. WE COULD GET A GOOD FEELING ABOUT WHETHER A BOOSTER AND MASTER CYLINDER ASSEMBLY, BOOSTER, OR MASTER CYLINDER IS ORIGINAL EQUIPMENT OR NOT.

NOTE: DOCMAN SHOWS BOTH ALLIED SIGNAL (AKA ALLIED AUTOMOTIVE, BENDIX) AND ALFRED TEVES GMBH ("ATE") BOOSTER AND MASTER CYLINDER ASSEMBLIES, FOR MODEL YEARS BEING STUDIED. TEVES PARTS, WITH AN "ATE" LOGO AND TWO BAR CODES, MAY BE MORE DIFFICULT TO POSITIVELY IDENTIFY THAN ALLIED SIGNAL PARTS. IT WAS EXPECTED TO FIND ONLY TEVES PARTS RELEASED FOR THE MODEL YEARS BEING STUDIED. I FIND BOTH TEVES AND ALLIED SIGNAL.

THE DIFFICULTY: FOR 1990 THROUGH 1995 PANTHER MODEL YEARS, WERS CONTAINS 61 BOOSTER AND MASTER CYLINDER ASSEMBLY PART NUMBERS. TODAY DOCMAN CONTAINS ONLY FIVE OF THESE PART NUMBERS, WILL PRINT FIVE PART NUMBERS, AND GIVES ME A WIDE BLANK SPACE THROUGH THE CENTER OF EACH PRINT. GOOD TOOLS.

MORE, SOON.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from MREESE -DRBN005 02/24/99 08:17 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL -DRBN005 JNEME -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)

Subject: Town car Master Cylinder

STEVE, CURRENT PRODUCTION PARTS HAVE A LABEL (FORD PART NUMBER, BAR CODE, OTHER INFORMATION). 1992/3/4 PARTS (DIFFERENT SUPPLIER) MAY HAVE HAD A SIMILAR LABEL. I WILL LOOK AT DOCMAN DRAWINGS, AND LET YOU KNOW.

CRITERIA? CURRENT PRODUCTION PARTS (WHICH USE A COMMON BOOSTER) HAVE DIFFERENT PART NUMBERS FOR ABS, VERSUS ABS/TC, USAGE. I WILL TAKE THE LOOK. THE PART NUMBER CAN SAY A LOT ABOUT THE CAR.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS--DRBN007 02/23/99 17:26 \*\*\*

To: MREESE -DRBN005

cc: JNEME -DRBN005 WABRAMCZ-DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Town car Master Cylinder

One of the criteria for selecting a 1992/93 test vehicle was that the master cylinder should be the original equipment. How can I tell by looking at it? Do you know why this is a criteria?

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG:FROM: MREESSE -DRBN005 TO: SREIMERS-DRBN007 02/27/99 16:13:37

To: SREIMERS-DRBN007  
cc: TBAZIL -DRBN005 LSMITH9 -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Disc Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.  
WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.  
ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM.  
I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC -Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS-DRBN007 02/28/99 15:39 \*\*\*

To: MREESSE -DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Disc Switch Re-location  
Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Parkus a sense of where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Parkus is monday at 3:30.

thanks,  
Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG:FROM: BPEASE -DRBN005 TO: SREIMERS-DRBN007 03/05/99 09:49:43

To: SREIMERS-DRBN007  
FROM: Bruce Pease (BPEASE) USAET(UTC -05:00)

Subject: Brake pressure Switch  
What is the pressure switch you are using now? What is its purpose? I believe all pass car brake lights operate on the fluid level sensor in the master cylinder.

Regards, Bruce Pease  
R&VT-Adv. Brake Systems, 84-54774, fax 39-04145  
\*\*\* Forwarding note from TBAZIL -DRBN005 03/05/99 08:12 \*\*\*  
To: SREIMERS-DRBN007 Reimers, Steve  
cc: BEGEN -DRBN007 MRESSE -DRBN005  
BPEASE -DRBN005 LSMITH9 -DRBN005  
NLAPPOINT -DRBN005 FPORTER -DRBN007  
FROM: Tom Brazil USAET(UTC -05:00)  
Subject: Brake pressure Switch

I don't think so without greater risk than existing ideas, but I welcome ideas from oca.  
Have a good day!

Thomas H. Basil (313) 59-47547 Eng & Lux Car OPD Brakes/Veh Supv  
Drop 1229-LVC, Ctrbo 24-H36, fax 62-16675, pager (888) 375-6449  
\*\*\* Forwarding note from SREIMERS-DRBN007 03/04/99 11:15 \*\*\*  
To: THAZIL -DRBN005 Basil, Tom  
cc: NLAPOINT-DRBN005 FPORTER-DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake pressure Switch  
Tom, Another potential solution... Isolate the pressure switch hydraulic port f rom the vehicle ground. Is there a way to connect the brake pressure switch to the prop-valve hydraulic port with a non-conductive tubing or spacer or something else????  
Steve Reimers building 5 3E008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

MSG:FROM: MREESE -DRBN005 TO: SREIMERS-DRBN007 03/05/99 14:27:15  
To: SREIMERS-DRBN007  
cc: THAZIL -DRBN005 LSMITH9 -DRBN005  
DSYLVVEST-DRBN006 WLIVINGS-DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location - DESIGN ORDER RESULTS  
STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994 TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY - SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C966-) ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED, AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.  
IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE 1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS, WRS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.  
IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.  
Regards,  
M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 2AM31  
\*\*\* Forwarding note from MREESE -DRBN005 03/01/99 12:24 \*\*\*  
To: SREIMERS-DRBN007 FPORTER-DRBN007  
cc: THAZIL -DRBN005 JNEME -DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Deca Switch Re-location - DESIGN ORDER  
STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE, CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994 TOWN CAR) BY NOON FRIDAY 1999 MAR 05.  
IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.

ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS-DRBN007 02/27/99 16:19 \*\*\*

To: MREESE -DRBN005

cc: FFPORTER -DRBN007 Porter, F.J.

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Decac Switch Re-location

Marty, Please call Fred Porter with the update from your meeting. I will be at MPG most of the day.

Steve Reimers building 5 3ED08

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MREESE -DRBN005 02/27/99 16:13 \*\*\*

To: SREIMERS-DRBN007

cc: TBAZIL -DRBN005 LSIMITH9 -DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Decac Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WILL KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK. THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.

ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105, VEHICLE TEST, BRAKE SYSTEM. I INTEND T CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 01.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS-DRBN007 02/25/99 15:39 \*\*\*

To: MREESE -DRBN005

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Decac Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good words I can pass on to my manager? I would like to give Jack Paskus a sense of where we are on this task, what the next step(s) are and when they are targetted to complete. My meeting with Paskus is monday at 3:30.

thanks,

Steve Reimers building 5 3C043

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: WDIXON2 -DRBN004 TO: SREIMERS-DRBN007 03/08/99 10:39:56

To: FFPORTER -DRBN007

cc: GMETZ -DRBN007 SREIMERS-DRBN007

WDIXON2 -DRBN004 NLAPONT -DRBN005

DKULKAR2 -DRBN005

FROM: WILFRED DIXON USAET(UTC -05:00)

Subject: Better Sealed Connector

Please setup a meeting with UTA's Rick Riske and Dan Kulkarni, Steve Reimers, Norm LaPointe, yourself and myself Wil Dixon. We need to discuss solutions.

to keep the water out of the brake switch. At 100 PSI, it is difficult to find a connector that will seal against water.

Thanks!

Regards,

WILFRED DIXON, EEESE, OPD

\*\*\* Forwarding note from SREIMERS--DRBN007 03/05/99 11:32 \*\*\*

To: WDDXON2 --DRBN004

cc: GMETZ --DRBN007 FPORTER --DRBN007 Porter, F.J.

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Better Sealed Connector

Wil, This is just a follow-up to our conversation this morning. I need from you a list of connectors that may potentially provide a better environmental seal than the currently used model. New-design time-lines do not support the potential re-call time-line. Please tell UTA or other suppliers of the need for a very rapid response to this inquiry.

thanks,

Steve Reimers Building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

---

MSG:FROM: MREESB --DRBN005 TO: SREIMERS--DRBN007 03/08/99 15:48:11

To: SREIMERS--DRBN007

cc: TBAZIL --DRBN005 DSYLVES1--DRBN005

JEVANSS --DRBN005 BPEASE --DRBN005

AZAPARAC--DRBN005 FPORTER --DRBN007

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Disc Switch Re-location

STEVE, I HAVE NO PROBLEM WITH JOE, BRUCE, OR AL LOOKING AT THE DESIGNER'S TUBE TO SEE THE PACKAGE AVAILABLE AROUND THE 1992 3/4 TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY (-2450-), BUT THEY ARE NOT THE RELEASE ACTIVITY THAT WOULD TRY TO RELEASE AN ELECTRICAL SWITCH INTO THAT ENVIRONMENT. SPEED CONTROL IS THAT RELEASE ACTIVITY.

I WILL BE OUT FOR A FEW DAYS. I WILL ASK A CORE DESIGNER TO COORDINATE WITH JOE, BRUCE, AND AL. PACKAGE REVIEW BY SPEED CONTROL DESIGN AND RELEASE? NEWS ABOUT 1992 MODEL TOWN CAR. THE 1992 SERVICE MANUAL SHOWS THIS FOR THE SPEED CONTROL SYSTEM:

- \* EARLY PRODUCTION VEHICLES USED A VACUUM DUMP VALVE, ON THE BRAKE PEDAL AND BRACKET ASSEMBLY. PAGE 10-03B-1.
- \* LATE PRODUCTION VEHICLES, LIKE 1993 AND 1994 MODEL TOWN CAR, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."

THIS WAS NOT A JOB #1 CHANGE. THAT HISTORY I DO NOT HAVE.

THIS IS ANOTHER PLACE WHERE THE SPEED CONTROL RELEASE ENGINEER COULD HELP; THAT IS, EXACTLY WHEN EARLY PRODUCTION STOPPED AND LATE PRODUCTION STARTED (VIN, DATE, ETC.).

Regards,

M. P. Reece 313-317-7142 (313-621-6675 FAX)

OPD LVC- Brakes Mail Drop 1229 BUILDING 2 24MS1

\*\*\* Forwarding note from SREIMERS--DRBN007 03/08/99 15:11 \*\*\*

To: MREESB --DRBN005

cc: JEVANSS --DRBN005 BPEASE --DRBN005

AZAPARAC--DRBN005 TBAZIL --DRBN005

FPORTER --DRBN007 Porter, F.J. JEAFATI--DRBN004

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

Please contact Joe Evans, Bruce Reese, and A. Zaprucki when you are ready for the check. These guys should be able to provide a good sanity check.

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MREESB --DRBN005 03/05/99 17:33 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL --DRBN005 LSMITH9 --DRBN005

DSYLVEST--DRBN006

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location, 1992/1993/1994 TOWN CAR

STEVE, PANTHER SERVICE MANUALS PROVIDE A LITTLE MORE LIGHT:

- 1993 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM) AND 1994 MODEL (ON PAGE 10-03-1, SPEED CONTROL SYSTEM - ELECTRONIC) MANUALS CONTAIN THIS SENTENCE, "THE SYSTEM OPERATES INDEPENDENT OF ENGINE VACUUM, THEREFORE NO VACUUM LINES ARE REQUIRED."
- I WILL FIND AND CHECK A 1992 MODEL MANUAL.

THIS SOMEWHAT SUPPORTS A SPACE BEING AVAILABLE ON THE TOWN CAR BRAKE PEDAL AND BRACKET ASSEMBLY. I WILL TRY TO BE READY, WHEN SOMEONE COMES TO CHECK.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)

OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31

\*\*\* Forwarding note from SREIMERS--DRBN007 03/05/99 17:24 \*\*\*

To: JKAFAWI --DRBN004

cc: FPORTER --DRBN007 Porter, F.J. MREESB --DRBN005

PKOHL --DRBN007

FROM: Steve Reimers USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location

Joe, Can you do the checking that Marty is requesting? Do you know who the design and release engineer(s) is for the brake pedal mounted switch and the harness?

?

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS sreimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from MREESB --DRBN005 03/05/99 14:27 \*\*\*

To: SREIMERS--DRBN007

cc: TBAZIL --DRBN005 LSMITH9 --DRBN005

DSYLVEST--DRBN006 WLIVINGS--DRBN005

FROM: M. P. REESE USAET(UTC -05:00)

Subject: Brake Deca Switch Re-location - DESIGN ORDER RESULTS

STEVE, THERE IS A PLACE FOR A SWITCH TO BE LOCATED ON THE 1992/1993/1994 TOWN CAR BRAKE PEDAL ASSEMBLY. IT IS THE "KEYHOLE" IN THE PEDAL ASSEMBLY'S BRACKET, WORKING WITH THE FLAT SURFACE ON THE PLASTIC ADAPTER (ON THE PEDAL ASSEMBLY'S ARM). THESE FEATURES WERE USED TO MOUNT THE VALVE ASSEMBLY - SPEED CONTROL (-9C727-) AND THE CLIP - SPEED CONTROL VACUUM VALVE (-9C966-) ON OTHER MODEL YEAR/CARLINE PANTHER CARS. SWITCH AND WIRING CLEARANCE TO STEERING COLUMN CRUSH ZONE WILL DEPEND ON DIMENSIONS OF SWITCH TO BE USED, AND WIRING ROUTING. (THE 1999 MODEL SWITCH, AT THIS LOCATION, DOES INTERFERE WITH THE CRUSH ZONE.) A DIFFERENT/NEW SWITCH WILL BE NEEDED.

IT IS TIME FOR THE CHECK TO VERIFY THESE RESULTS, THAT I REQUESTED DURING THE 1999 MAR 03 MEETING. THE CHECK IS NEEDED, BECAUSE REFERENCES (DESIGN LAYOUTS, WERS, DOCMAN, ETC.) THAT WE HAVE AVAILABLE (AND RECOVERED FROM ARCHIVES) ARE NOT PERFECT. I REQUEST REVIEW BY THE APPROPRIATE DESIGN AND RELEASE (SWITCH

AND WIRING) ENGINEER. PLEASE RELAY THIS REQUEST.  
IF THIS SOLUTION DOES NOT HOLD UP TO THE CHECK, THEN WE WILL NOT BE ABLE TO  
ADD A SWITCH ON THE BRAKE PEDAL AND BRACKET ASSEMBLY.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from MREESSE --DRBN005 03/01/99 12:24 \*\*\*  
To: SREIMERS--DRBN007 FPORTER--DRBN007  
cc: TBAZIL --DRBN005 JNEME --DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Dec Switch Re-location - DESIGN ORDER

STEVE, THE RESULT OF THE MEETING THIS MORNING IS THAT WE WILL HAVE A FEASIBLE,  
CLEAR SOLUTION (FOR SWITCH MOUNTED TO BRAKE PEDAL ASSEMBLY, ON 1992/1993/1994  
TOWN CAR) BY NOON FRIDAY 1999 MAR 05.

IN MAKING THIS SOLUTION, WE ARE BEING VERY CAREFUL SO THAT WE DO NOT MAKE  
SOMETHING ELSE WORSE. THE HISTORY IS VAGUE.

ANY GOOD NEWS, ABOUT OTHER SOLUTIONS?

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS--DRBN007 02/27/99 16:19 \*\*\*  
To: MREESSE --DRBN005  
cc: FPORTER --DRBN007 Porter, F.J.  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Dec Switch Re-location

Marty, Please call Fred Porter with the update from your meeting. I will be at  
MPG most of the day.

Steve Reimers building 5 3B008  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >  
\*\*\* Forwarding note from MREESSE --DRBN005 02/27/99 16:13 \*\*\*  
To: SREIMERS--DRBN007  
cc: TBAZIL --DRBN005 LSMITH9 --DRBN005  
FROM: M. P. REESE USAET(UTC -05:00)  
Subject: Brake Dec Switch Re-location

I AM OPTIMISTIC ABOUT ABILITY TO PACKAGE THE CURRENT PRODUCTION SWITCH ON  
THE BRAKE PEDAL AND BRACKET ASSEMBLY IN 1992/1993/1994 TOWN CARS. I WELL  
KNOW MORE (BUT NOT EVERYTHING) ABOUT TIMING AT THE CONCLUSION OF A 9:00 AM  
MEETING WITH CHASSIS DESIGNERS. GENERAL OPTIMISM COMES FROM THE BRAKE  
PEDAL AND BRACKET ASSEMBLY DRAWINGS; THEY (SO FAR) SHOW EVOLUTION OVER THE  
MODEL YEARS, AND INVOLVE ONLY ONE SUPPLIER.

WERS AND DOCMAN ARE NOT IN GOOD SHAPE FOR THIS 1992/1993/1994 MODEL TASK.  
THAT SLOWS THE ADVANCE. FACILITATES AMBUSH.

ALWAYS, I MUST CONSIDER EFFECTS ON FMVSS 105. VEHICLE TEST, BRAKE SYSTEM.  
I INTEND TO CALL YOU, ABOUT NOON ON MONDAY 1999 MAR 06.

Regards,

M. P. Reese 313-317-7142 (313-621-6675 FAX)  
OPD LVC - Brakes Mail Drop 1229 BUILDING 2 24M31  
\*\*\* Forwarding note from SREIMERS--DRBN007 02/25/99 15:39 \*\*\*  
To: MREESSE --DRBN005  
FROM: Steve Reimers USAET(UTC -05:00)  
Subject: Brake Dec Switch Re-location

Marty, I was asked what the status of this design work. Have you got any good  
words I can pass on to my manager? I would like to give Jack Paulus a sense of

where we are on this task, what the next step(s) are and when they are targeted to complete. My meeting with Puskas is Monday at 3:30.  
thanks,

Steve Reimers building 5 3C043  
AVT Chassis E/E System Applications mail drop 5011  
39-03286 SREIMERS reimers@ford.com fax 39-03286 >

---

MSG:FROM: PA38JQ93-EXTERNAL TO: SREIMERS-DRBN007 03/08/99 16:13:37

To: SREIMERS-FORDMAIL

cc: II972818-EXTERNAL II972818

From: Charles Flynn

Subject: Towacar - Brake Pressure switch connectors

From: "Charles Flynn" <CFLYNN@uta.com>

Steve,

I got the parts that I need for your jumper. I have a question, however. The wire that we used back then is not generally used anymore and I don't have any. The newer wire is basically the same, but the insulation is thinner. My concern is relative to the seal between the wire insulation and the connector grommet.

The original design called for 18 gage, AB wire. But if I use the 18 gage thin-wall (AZ) wire, it may not seal as well. The 16 gage AZ wire is closer in outside diameter to the 18 gage (AB) wire. Is any of this important to the test that you have in mind?

I guess I would like to know what the conditions of the test will be, so that the results you get will be meaningful. Please advise.

Charles Flynn

313-593-9352

---

MSG:FROM: BPEASE -DRBN005 TO: SREIMERS-DRBN007 03/15/99 17:14:21

To: SREIMERS-DRBN007

cc: FPORTER -DRBN007

FROM: Bruce Pease (BPEASE)

USAET(UTC -05:00)

Subject: Nmc Conductor

Did you check current with your testing? I think the only way would be to do actual parts. But like your note, 5 times very little is still little.

Directionally there may be an alloy or something to do the job.

Regards, Bruce Pease

R&VT-Adv. Brake Systems, B4-54774, fax 39-04145

\*\*\* Forwarding note from SREIMERS-DRBN007 03/15/99 17:05 \*\*\*

To: BPEASE -DRBN005

cc: FPORTER -DRBN007 Porter, F.J.

FROM: Steve Reimers

USAET(UTC -05:00)

Subject: Nmc Conductor

5 x 5 ohms = 25 ohms a very good current limiter.

However 5 x 0.05 = 0.25 ohms isn't. I suspect we are closer to the 0.25 ohm condition but I have not measured it. Can you calculate how much total resistance the steel provides?

Steve Reimers building 5 3E008

AVT Chassis E/E System Applications mail drop 5011

39-03286 SREIMERS reimers@ford.com fax 39-03286 >

\*\*\* Forwarding note from BPEASE -DRBN005 03/15/99 16:34 \*\*\*

To: KGRIBBLE-DRBN003

GSTEVEN1-DRBN005

cc: SREIMERS-DRBN007

FPORTER -DRBN007

FROM: Bruce Pease (BPEASE)

USAET(UTC -05:00)

Subject: Non Conductor

In reviewing the speed control switch issue, it occurs to me that the switch might be isolated (not grounded) to the prop valve if we were to put an insulating spacer between the switch and valve in the form of a double threaded bushing. This bushing would have to have strength similar to steel and yet be a non conductor. I checked Metric Handbook and the resistance for steel (switch) is 95.8 (ohr mil per foot), for aluminum (valve) is 17.01, and for cast iron is 448-588. Can a resistance path of 5x resistance cut the current back to an acceptable heating in dead short situation? The cast iron would be fairly easy to machine into bushings.

My question is: in the exotic world of materials, are there other candidates for bushing material? non-metallic?

Regards, Bruce Poese

R&VT-Adv. Brake Systems, 84-54774, fax 39-04145

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MSG FROM: FPORTER --DRBN007 TO: SREIMERS--DRBN007 03/16/99 15:21:07

To: JBURDA --DRBN006 RERSKINE--DRBN005

cc: SREIMERS--DRBN007

FROM: F. J. Porter USAET(UTC -05:00)

Subject: (U) Ground Fault Detector

Goodmen,

I need your help.

I am the supervisor for ESEB's Chassis Electronics Section. We are looking to find a device that could be placed in-line across a switch that would interrupt the circuit if the current entering the switch is different than the current exiting the switch.

I don't know what other information would be required to specify such a device or what company may be helpful in providing it for us.

I would appreciate any help you could provide. I schedule a meeting for Thursday or Friday for further discussion.

Please let me know your ideas.

Regards,

Fred Porter OV - fpoter fpoter@ford.com

Chassis E/E Systems Applications (313)845-3722

Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145

\*\*\* Forwarding note from JBURBA --DRBN005 03/16/99 14:17 \*\*\*

To: FPORTER --DRBN007

cc: MHARDIE --DRBN005

FROM: Joe Burba USAET(UTC -05:00)

Subject: (U) Ground Fault Detector

Fred,

I am not sure what your application is, but we have a number of experts on GFCI devices here in EV. As you might imagine, it is quite an interest of ours. Craig Toepfer (ctmopfa1) is a technical specialist on infrastructure. Ralph Erskine (rerskine) is a D&R engineer on our charge ports. I can be called in to the discussion, if necessary.

Good to hear from you Mike.

Regards,

Joe Burba

Supervisor,

Vehicle Propulsion Engineering

\*\*\* Forwarding note from MHARDIE --DRBN005 03/16/99 14:00 \*\*\*

To: FPORTER --DRBN007

cc: JBURBA --DRBN005